South African Version of the International Affective Picture System

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Abstract

Emotions are fundamental to human functioning and effective social adaptation. Consequently, psychometric tools such as the *International Affective Picture System* (IAPS) have been developed to assess emotion. However, emotions have been shown to differ cross-culturally in how they are elicited, expressed, and judged. As a result, studies have sought to determine the efficacy of the IAPS cross-culturally. To our knowledge, no such study currently exists within South Africa (SA) and measures to assess emotion are needed. Aligned with previous literature this study assessed the universality of the IAPS by testing a subset of images in conjunction with the Self-Assessment Manikin to evaluate two dimensions of emotion: valence and arousal. Additionally, this study sought to determine the efficacy of redeveloping IAPS imagery in terms of culturally relevant content. This subset was titled the *South African Affective Picture System* (SA-APS). Both the IAPS and SA-APS were presented to the same SA sample, which comprised of lower socioeconomic status (SES) individuals (N=29; M=26.62; SD=4.46). Concurrent with existing cross-cultural studies, the SA sample did not respond appropriately to the arousal spectrum. Surprisingly, participants' responses toward *both* IAPS and SA-APS images, in terms of valence were strongly correlated with U.S. norms, r= .913 and r= .910, respectively. Despite these overall correlations, significance testing, effect sizes and visual inspection, revealed that significant differences exist in SA responses to individual IAPS and SA-APS images when compared with U.S. norms. Some problematic IAPS images were corrected with SA-APS equivalents, although many images need to be corrected by future research.

Keywords. Emotion; Valence; Arousal; International Affective Picture System; Cross-Cultural Validation; Cross-Cultural Differences; South Africa

South African Version of the International Affective Picture System

Emotions are fundamental to human functioning and play a crucial role in the construction of physiological responses, cognitive processing, and social behaviour (DeSteno, Gross, & Kubzansky, 2013; Wilhelm & Grossman, 2010). Emotions allow us to evaluate our internal bodily states thereby serving as a regulatory system for homeostasis. Feelings ranging from pleasure to displeasure motivate planning and guide behaviour (Vandekerckhobe & Panksepp, 2011). Effective emotional processing is necessary for both basic as well as higher-order evolutionary adaptation as it motivates instinctive behaviours in all species and enables the human capacity for self-awareness and social skills that are vital within modern society (Bradley, Codipoti, Cuthbert, & Lang, 2000; Zilmer, Spears & Culbertson, 2008). Thus, the inescapable nature of emotion has necessitated its study (Strongman, 2003). Assessing emotions through standardized measures allows researchers to understand concerns surrounding emotional health, provide norms against which emotional development can be assessed, and offer a means through which emotional impairment can be understood (Bradley and Lang, 2007). One such measure, which can be used to investigate emotion from a wide range of perspectives, is the *International Affective Picture System* (IAPS) (Grandjean, 2015).

Literature Review

Despite its successful use in published studies, there remains a potential problem with the IAPS, as with many other current psychometric tools to assess emotion that have been developed within a Western context. Studies identify that emotions differ cross-culturally in how they are elicited, expressed and judged (Ekman, 1999; Kan et al., 2014). The IAPS is designed to elicit a particular set of emotions through imagery with an expected pattern of responses. For non-Western cultures, the current test may therefore not elicit the same emotions on this measure rendering subsequent judgment of imagery different than that intended by the developers of the IAPS. Considering the importance of research focusing on emotional functioning, culturally specific and valid measures are essential for future studies. Moreover, within South Africa the use of psychometric tests that have not yet been validated within all populations groups is prohibited (Tredoux & Foster, 2005). To our knowledge, there are no reliable and valid measures available within our local context. In response, this study sets out to develop a culturally relevant version of the IAPS for a South African (SA) population.

The Efficacy of the IAPS

The IAPS was developed in the USA and consists of a series of pictures that can be used in conjunction with the Self Assessment Manikin (SAM) to reliably assess arousal, valence and dominance of specific emotions (Bradley & Lang, 1994). More recently, the IAPS has been used to assess a two-dimensional model of emotion, focusing only on valence and arousal, as dominance has predominantly been difficult to differentiate from arousal (Scherer, 2005; Bradley & Lang, 2007). From this dimensional viewpoint, valence and arousal are a simple and reliable classification system for the study of basic emotion, and have therefore been considered optimal for defining emotion (Ekman, 1999; Kuppens, Russel, Tuerlinkx & Barett, 2013).

Valence is a term used to denote the quality of emotions, which range from pleasure to displeasure. Pleasure at its highest level includes states of extreme excitement, happiness, amusement or even appreciation for beauty, amongst others. At the other extreme, displeasurable experiences are categorised by feelings of negativity and can cause worry, revulsion, anger or unhappiness (Bradley & Lang, 2007; Russell & Mehrabian, 1977). Arousal is an emotional state, which comprises moods and feelings that range from calm to excited (Lang, Bradley, & Cuthbert, 2008; Russell 2003). It must be noted that arousal is not merely the intensity of affective valence – it is both a subjective state as well as a neurophysiological response (Reisenzein, 1994; Feldman Barrett, 1998). In this state, one focuses on feelings of either activation or deactivation and then interprets these feelings as part of the overall affective experience (Solms, 2002). All emotions are a linear combination of valence and arousal that exist upon a continuum and work together to generate and monitor emotional experiences (Posner, Russell & Peterson, 2005).

Beyond a broad study of emotion, the IAPS is also widely used to assess disorders of emotional processing ranging from neurological to psychological within clinical contexts (Bradley & Lang, 2007; Britton, Taylor, Sudheimer, & Liberzon, 2006). For example, the IAPS has been used as a measure to evoke emotion in depressed individuals in order for researchers to understand the pathophysiology of this disorder (Johnstone, van Reekum, Urry, Kalin, & Davidson, 2007). Johnstone et al., (2007), examining neurobiological correlates of depression, found that depressed participants show greater activity in the prefrontal cortex (PFC) when downregulating negative affect, with depressed individuals demonstrating bilateral rather than left-lateralized activation of the PFC. In addition, the ventromsial PFC, which serves to mediate amygdala activation, is dysfunctional for

depressed patients. In contrast, nondepressed individuals demonstrate a positive correlation between activation within the VMPFC and amygdala (Johnstone et al., 2007).

Furthermore, the IAPS is used in studies examining Post Traumatic Stress Disorder (PTSD) as the use of imagery is more effective in providing a comprehensive understanding of PTSD than self-report measures and interviews alone (Amdur, Larsen, & Liberzon, 2000). The pictorial stimuli of the IAPS have the potential to overcome patterns of avoidance typical of PTSD patients during written self-report measures or interviews. As a result, these reports tend to identify PTSD patients as suffering from emotional numbness, whereas the IAPS does not (Amdur et al., 2000).

Since depression and anxiety disorders have been listed amongst the top three most prevalent lifetime psychiatric disorders within South Africa, it would clearly be valuable to develop a culturally relevant version of the IAPS in order to highlight psychopathology within our local context (Williams et al., 2008).

Cultural Relevance and the IAPS

Cognitive ability that is measured by standardised instruments varies according to culture, as test contents and the process of taking a particular test are learned capacities that are culturally entrenched. Consequently, culture is seen as a moderating variable in the test-taking process, amongst factors such as education and language (Ardila, 1995; Richardson, 2002). Irrespective of cultural variability, Western cultural perspectives and the English language are predominantly used within existing psychological measures (Wierzbicka, 1992). This can prove problematic for research validity and reliability when participants are not of a Western culture or first language English speakers (Mcdonald & Van Eeden, 2014).

Whilst the IAPS is universally accessible, it is not necessarily relevant in culturally diverse contexts. This has been illustrated by various studies. Hu et al., (2005) for example used the IAPS to study affective reactions of Chinese versus American adults and found that valence and arousal ratings for erotic images differed significantly. Kwon, Scheibe, Samanez-Larkin, Tsai, and Carstensen (2009) utilised the IAPS for a Korean population and concluded that the older generation participants had scores which differed significantly from Western norms, although the younger generation participants did not. Furthermore Ribeiro, Pompeia and Bueno (2005) found that, in general, Brazilian ratings demonstrated higher arousal despite strong correlations in terms of valence, arousal and dominance as compared to Western norms. These studies show that to understand varying responses, cultural conceptualisations of affect need to be taken into account in a nuanced way within each specific context (Wierzbicka, 1992).

When assessing cross-cultural consistency within the IAPS, Bradley and Lang (2007) therefore refer only to consistency within Western cultures such as America, Germany and Sweden. Certain images may not elicit the same emotions in other cultures, and would therefore not be similarly judged. Examples include images of Western-based sports ranging from bullfighting to synchronised skiing, which have been given high ratings of positive valence and arousal according to norms obtained from the United States. However, it is noteworthy that responses toward images that are negatively valenced and highly arousing, like lacerations, mutilations, weapons and cadavers, tend to be universal (Grühn, Scheibe, and Baltes, 2007).

IAPS in South Africa

Foxcroft (1997) argued that there is a scarcity of culturally relevant tests within South Africa. One important reason for this scarcity is because creating such measures is difficult within a multicultural and multilingual populace. To date, the majority of the measures assessing *emotion* in South Africa pertain to emotional intelligence. These include the Rahim Emotional Intelligence Index and the Schutte Emotional Intelligence Scale (Nel, du Plessis, & Bosman, 2015). Emotional intelligence tests measure the extent to which individuals successfully cope with both their emotions and the emotions of others in order to manage and overcome the demands of everyday life (Britton et al, 2006; Nel, du Plessis, & Bosman, 2015). By contrast, the IAPS elicits emotion through the use of imagery in order assist with the assessment of emotional processing.

In recent years, there have been attempts to develop psychometric tests for target populations within South Africa, which include creating new assessments for measuring depression in Khayelitsha (Schneider, Baron, Davies, Bass, & Lund, 2015). Focusing on a target populations results in the best norms in terms of validity and reliability of measurement for that population. This is because the SA population is so diverse, that validity and reliability is compromised when you apply the same norms across different cultural groups of the wider population. Within their defined scope, these studies have demonstrated improved accuracy and consistency of measurement in comparison with Western tests.

In creating a culturally relevant SA version of the IAPS, careful consideration of the target population is required. One key area of study in which the IAPS is particularly useful, is that of psychopathology. Poor mental health is most strongly associated low socio-economic status (SES), which often results in conditions that compromise the individual's psychological and emotional well-being (Stein et al, 2008). Recent studies have found depression, substance abuse and anxiety within South Africa, to be more prevalent and

persistent amongst lower SES individuals (Hamad, Fernald, Carlan, & Zinman, 2008; Herman et al, 2009; Lorant et al., 2003; Stein et al, 2008). With the majority of South Africans falling within the lower SES (Muntingh, 2013; Van der Berg, 2010; Yu, 2015) and the IAPS proving useful in studies assessing psychopathology, it would be of great value to rework this measure so that it would be relevant for a low SES target population (Johnstone et al., 2007).

Furthermore, the majority of low SES individuals in South Africa experience poor quality education (Spaull, 2013). As a result, their acculturation differs markedly from high SES individuals that are more likely to be exposed to Western culture, even if their primary culture is not of a Western origin (Gfroerer & Tan, 2003). The majority of the SA population is therefore likely not to be strongly acculturated to Western perspectives, not only from the point of view of their cultural heritage but also through the quality of their education. As majority of IAPS studies, for example, Brazil, Sweden and Bosnia specifically sampled university students, generalisability of these existing IAPS results is therefore limited to individuals with a higher education (Bradley, 2014; Ribeiro, Pompéia & Bueno, 2005; Västfjäll & Gärling, 2007; Drače, Efendić, Kusturica, & Landžo, 2013).

Consequently, a SA version of the IAPS needs to be developed in order (a) to gain culturally relevant insight into emotional processes within a SA population; (b) for researchers to be given at least one other tool to understand emotion in South Africa; and (c) for SA research to be made comparable with the large body of international studies using the IAPS.

Aims and Hypotheses

The aim of this research is to develop a culturally relevant version of the IAPS for South Africans of a lower SES. We have called this new version of the original IAPS the SA-APS. We hypothesize that (1) The original IAPS will evoke valence and arousal scores in lower SES SA participants that are significantly different from the norms published in the original version (2) The SA-APS will evoke valence and arousal scores similar to those obtained by the original IAPS for a Westernised population.

Method

Design and Setting

This study employed a within-subjects design with independent variables being: the SA-APS and the IAPS, and dependent variables: valence and arousal. Owing to this study

comparing the responses of SA participants to both the SA-APS and IAPS the design sought to control for inter-individual differences by utilizing the same participants for both picture systems.

Participants

We recruited 29 participants, 12 male and 17 female, between the ages of 18 and 34. In terms of racial demographic, 26 participants were black and 3 were coloured. For this study we adopted a convenience sampling technique to recruit participants within the Western Cape Province by placing advertisements in the *People's Post, City Vision* and *Vukani* newspapers (see Appendix A). The areas that these papers are distributed to served as markers for low SES. Targeting individuals from these specific areas would also ensure that all participants share a similar cultural background and are representative of majority of the SA population (Van der Berg, 2010). In addition, we recruited through Harambee, a human resource consulting agency that deals with individuals from a lower SES who are unemployed. We screened all individuals from Phase 1 of the Harambee programme over two consecutive weeks.

Eligibility criteria. Participants were included if they:

1. Fell between the ages of 18 and 35: There are two interlinked reasons for this inclusion criterion. Firstly, older and younger generations have shown significantly different responses to certain subsets of the IAPS (Grühn & Scheibe, 2008). Secondly, all norms to which our study will be compared have been obtained from college students who had enrolled in an introductory Psychology course (Lang, Bradley, & Cuthbert, 2008). On average, college students have a median age of 27 (Freedman, 2013).
2. Did not have Major Depressive Disorder: This disorder is associated with emotion dysregulation (Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010). It is necessary that the SA-APS be standardised for individuals free from psychopathology, so that deviations from 'normal/healthy' responses can be measured in future studies.
3. Did not have Post Traumatic Stress Disorder (PTSD): PTSD symptoms include difficulties with emotion regulation and having compromised emotional clarity (Ehring & Quack, 2010).
4. Did not have a maladaptive pattern of alcohol use: Studies have shown alcohol abusers to be less responsive to emotional stimuli (Oscar-Berman & Marinkovic, 2003).

5. Were not dependent on recreational drugs currently or within the last 12 months: Emotional bluntness and problems of emotional reactivity are common symptoms amongst recreational drug users (Hatzigiakoumis, Martinotti, Giannantonio, & Janiri, 2011).
6. Were not taking any psychotropic drugs currently or within the last 12 months: Drugs that have the ability to produce mood alterations, changes in consciousness, perception, and thinking patterns, which have the potential to confound results (Ericson et al., 2008).

Materials and Apparatus

Screening and Diagnostic Measures.

The Patient Health Questionnaire for Depression-2 (PHQ-2). The PHQ-2 is a brief screening test for depression comprising of 2 items, which assess the extent to which depressive symptoms have presented in individuals during the previous 2 weeks. In a study sampling 6000 patients to assess major depression, the PHQ-2 proved both sensitive and specific, with ratios of 83% and 92%, respectively. Criterion validity was established in accordance to standards set by the Mental Health Professional interview (Kroenke et al., 2003). In accordance with guidelines, our cut-off score was 3 as this indicates daily experience of depressive feelings. However, after screening over 100 respondents, we realized that question 1 was often confusing and therefore, if respondents screened 3 or 4 we used the lengthier version, the PHQ-9. Having more questions allowed us to better ascertain whether respondents were experiencing depressive symptomatology.

The Patient Health Questionnaire for Depression-9 (PHQ-9). The PHQ-9 comprises of 9 questions, which aim to quickly detect depression and measure the severity of the symptoms experienced by individuals over a recent 2-week period. The screen integrates DSM-IV diagnostic criteria as well as other important indicators for major depression, and has been used successfully in several obstetrical and primary care clinics as a diagnostic tool. Scores ranging between 5 and 9 indicate minimal symptoms while any score above or equal to 10 is cause for concern. Scores of 10 or greater on the PHQ-9 have been found to be both sensitive and specific; with major depression being accurately predicted 88% of the time (Kroenke, Spitzer & Williams, 2001). As a result, we chose to use a cut-off score of ≥ 9 for our screening.

Alcohol Use Disorders Identification Test Consumption (AUDIT-C). The AUDIT-C is an abbreviated version of the AUDIT, comprising of three questions and is considered to be a reliable, valid, brief measure to detect heavy drinking, active alcohol abuse, and

dependence. The screen ranges from 0-12 whereby scores closer to 12 indicate greater risk behaviour. There is not much discrepancy in the diagnostic ability of the AUDIT-C and AUDIT (0.880 vs 0.881). Additionally, being a binary classification screening, the AUDIT-C has been supported as a stronger predictor of heavy drinking than the complete AUDIT (0.891 vs 0.881; $p = .03$) (Bush et al., 1998). Aligned with the guidelines, a cut-off score was set at 4 for men and 3 for women.

Yes/No questions. During screening applicants were asked whether they currently were using or had used any drugs or medication in the past 12 months.

The 4-item Primary Care Post-Traumatic Stress Disorder Screen (PC-PTSD). The PC-PTSD is a concise and reliable screening test consisting of four yes/no questions. We excluded respondents who answered 'yes' to 3 or more of these questions. Though brief, the PC-PTSD has shown good content validity as it specifically focuses on diagnosing symptoms of trauma rather than screening for traumatic exposure (Prins et al., 2003). Being disorder-specific, the PC-PTSD has shown to be 10% more effective than the General Health Questionnaire-12 in predicting PTSD (Ouimette, Wade, Prins, & Schohn, 2008). The PC-PTSD displays good criterion validity having (a) shown diagnostic ability 85% concurrent with the Trauma Screening Questionnaire, which is known to be a comprehensive measure of PTSD; (b) demonstrated good test-rest reliability ($p < .001$); and (c) demonstrated to be 17% stronger in detecting PTSD than the Clinician Administered Scale for PTSD (a robust measure that follows DSM-IV guidelines) (Brewin et al., 2002; Prins et al., 2003).

Experimental Measures.

The International Affective Picture System (IAPS). The IAPS is an extensive pictorial database comprising of 1182 images, which are selected to evoke valence and arousal in order to study the emotional processing of participants (see Appendix B). For the purposes of our study a subset of 340 images was chosen (see below), and had an equal distribution of the valence and arousal dimensions. This picture series is presented in colour, and contains high-resolution images of diverse subject matter (Lang et al., 2008). Images range from damaged bodies and kitchen utensils to photographs of happy children. This picture series is both reliable and valid for assessing emotional processing within studies conducted on Western populations (Lang et al., 2008).

Selecting the IAPS Subset. The valence-arousal spectrum includes: pleasant–aroused, pleasant–calm, neutral, unpleasant–calm, and unpleasant–aroused (Backs et al., 2005). In order to stratify according to these 5 groups, norms from all 1182 IAPS images obtained by Bradley and Lang (2008) were placed into an Excel spreadsheet and first sorted according to

valence. Images containing valence norms ranging between 1 and 3.99 were placed into two new spreadsheets titled Unpleasant-Aroused and Unpleasant-Calm. Images that ranged in valence between 4 and 5.99 were placed in a new spreadsheet titled Neutral and those which fell between 6 and 9 were placed in two new spreadsheets titled Pleasant-Aroused and Pleasant-Calm. After valence norms were ordered, each new spreadsheet was re-arranged according to arousal norms. Unpleasant-Calm images were sorted in terms of arousal norms from lowest to highest and the first half of this spreadsheet was retained. Unpleasant-Aroused images were sorted in terms of arousal ratings from highest to lowest. Once again only the first half of the images was retained leaving Unpleasant-Calm with 183 images and Unpleasant-Aroused with 182 images. The same process was carried out for Pleasant-Calm and Pleasant-Aroused categories, leaving 215 images in each spreadsheet. In accordance with the valence-arousal spectrum, neutral images were not sorted in terms of arousal (Backs et al., 2005). Therefore all 325 images were retained. Thereafter, in order to create the subset of images, we used an online number generator to gain a random number of 68 images with which to select from each spreadsheet (see Appendix C). These images were sourced from the IAPS to form a balanced subset of pictures.

The South African Affective Picture System (SA-APS). The SA-APS is an adaptation of the aforementioned subset of images selected from the original IAPS. Similar to the IAPS the SA-APS is comprised of evocative, high-resolution images. This picture system contains 340 images that are representative of the valence-arousal spectrum. Each group contains 68 images that are matched in content to the original IAPS. However, of this subset 88 images have been retained from the IAPS as either their content could not be matched adequately or research has suggested that their content is likely to be understood in a similar manner cross-culturally (Bradley & Lang, 2007). Therefore, in addition to using universally arousing images from the IAPS, such as imagery conveying mortality, the SA-APS comprises content relevant to a lower SES SA population. As race and SES are intimately linked, IAPS images, which are predominantly of white individuals, were changed to images of black individuals to suit our intended sample (Muntingh, 2013; see Appendix D). Moreover, culturally biased objects and scenes such as bullfighting were also substituted with objects and scenes more relevant to our local culture such as rugby (see Appendix D). To match images we used the search engine Google and personal images with subjective discretion and supervisor's guidance. Lastly, all images were re-sized in accordance with dimensions of the IAPS.

Self Assessment Manikin (SAM). The SAM comprises valence and arousal dimensions. Each dimension includes five emotive characters and neutral midpoints that form a bipolar 9-point Likert scale (see Appendix E). For the purposes of our study the SAM was used in conjunction with the IAPS and SA-APS, as a brief, non-verbal assessment that measured participants' subjective ratings of valence and arousal in response to the images presented. The valence dimension ranges from positive (smiling) to negative (frowning) expressions, arousal varies from a highly active to sleeping figure, and the midpoints indicate a neutral response. Moreover, being a graphic rating scale, the SAM has been identified as a measure that is neither affected by age nor culture and has displayed high internal consistency with a reliability coefficient of $p < .001$ (Bradley & Lang, 1994; Morris, 1995).

Procedure

Newspaper advertisements were run to recruit participants. Respondents who contacted us via SMS were subsequently screened telephonically and those who qualified were sent an SMS detailing the study (see Appendix F; see Appendix G). Brief screening measures were therefore used. A pilot study was first conducted, followed by seven sessions of data collection. For the last session, participants were recruited from, and screened at Harambee.

Pilot Study. Upon arrival, informed consent was obtained and response booklets, each containing 174 sets of SAM, were provided for Session 1 and 2 (see Appendix H; see Appendix I). The study ran over two Saturdays and lasted approximately 2 and a half hours each week with a 10-minute break. After the break, participants were reminded to concentrate and rate the pictures as honestly and accurately as possible. The first Saturday, 7 participants were presented with the SA-APS and the following week 4 returning participants were presented with the IAPS. Both week's screenings were similar, however, the PowerPoint presentation for the IAPS was shortened owing to the repetition of 88 images.

Following the IAPS technical manual a list of instructions was read out to all participants yet these instructions were edited in order to suit our sample (see Appendix J). A smartboard was used simultaneously to (1) demonstrate how the rating system works, and (2) administer our PowerPoint presentation of IAPS and SA-APS images (see Appendix K for a breakdown of how the slideshow was compiled). Participants were given a practice round, comprising of 3 images, to ensure that each individual was comfortable with the rating procedure and range of emotionally evocative images that followed. After the practice round, participants were asked to voice any questions.

To conclude, participants were thanked for their participation and given a short debriefing. Each participant received a R160 Shoprite voucher and signed a register as payment confirmation. However, attrition and the paper-pencil SAM proved problematic and were subsequently rectified in the actual study.

The Actual Study. The IAPS and SA-APS were computerized with the use of E-Prime software. Having the 'forced choice' option ensured that each item was responded to and all data were accurately captured. Converting this study to computer drastically shortened its length and therefore allowed for both the IAPS and SA-APS to be tested within a two and a half hour session. This eliminated the problem of attrition while maintaining a within-subjects design.

Study Procedure. Upon arrival informed consent was obtained from participants and each participant was randomly assigned a computer that either screened the IAPS or SA-APS first (see Appendix H). This technique of counterbalancing was employed to control for fatigue and carryover effects (Ackerman & Kanfer, 2009; Terre Blanche, Durrheim, & Painter, 2006). Similar to the Pilot study, a list of instructions was read out to all participants preceding their practice round which comprised of 3 images (see Appendix L). After the completion of one picture system, participants were given a break whereby snacks and refreshments were provided. Both the IAPS and SA-APS were presented using E-Prime software. The same computers at the University of Cape Town (UCT) were used for each screening to ensure standardization in terms of setting, screen quality and dimensions. Each image was screened for 6 seconds in a random order, to control for sequence effects, followed by SAM Valence and Arousal rating scales. As aforementioned, it is important to note that 88 images were excluded from the IAPS presentation as these images appeared in both the SA-APS and IAPS. To conclude, participants were thanked for their participation, given a short debriefing as well as their R110 Shoprite Voucher.

Ethical Considerations. Official ethical clearance was granted by the Department of Psychology at UCT before conducting our pilot study. Prior to the telephonic screening and actual study itself, informed consent was obtained from respondents. This was carried out to alert respondents and participants to the voluntary nature of their participation and ability to opt out at any point.

Throughout the screening and the study itself, instructions were kept simple so that second language English speaking participants were fully informed of procedures during each stage of the study. This was particularly salient during screening because a potential risk of

participating in the study was that the sensitive content of the IAPS and SA-APS could be especially distressing to a PTSD population group (Putnam, 2002).

Only age and gender were captured with E-Prime software prior to administering the pictorial database to ensure anonymity. Participants were also assured confidentiality of their personal details within the study. Consequently, all information collected was securely stored in filing cabinets at UCT and all soft copies were password protected. Only the present researchers and necessary university personnel were able to access this information.

Despite screening measures, the imagery of the IAPS and SA-APS could still have adversely affected the chosen sample. Immediately after the study participants were therefore debriefed and informed to contact researchers for counselling referrals if the images continued to be a source of distress. As yet, no participant has contacted researchers. Shoprite vouchers were given to all participants as compensation for their time and transport costs.

Data Management and Statistical Analyses

All statistical tests were run using Excel 2007 software. Data obtained from two E-DataAid 2.0 files (one for the IAPS and the other, the SA-APS) per participant were merged using an E-Merge function that allowed for its export into Excel. Thereafter, statistical tests for means, standard deviations and Pearson's product moment-correlation coefficient were run using Excel functions that could be applied to each item. Excel functions were also used to create simple linear scatterplots and bar graphs for further analysis of the data. In terms of inferential statistics, to examine within-group differences with regard to U.S. norms, and SA responses toward IAPS and SA-APS images, we conducted a series of one-sample *t*-tests. We decided to use this form of analysis as U.S. norms have been provided by Bradley and Lang (2007) for international comparison. However, *t*-test calculations were not run using the standard Excel function, as raw data for U.S. norms was unavailable. As such, each step of a one-sample *t*-test was applied manually. A step-by-step formula was also applied to obtain Cohen's *d* per item. Though not a statistically sound practice, visual inspection was used to identify categorical differences that *t*-tests and effect size were not detecting owing to our small sample. For this study, the significance level was set at $p < .05$.

Results

Participant Characteristics

Of the 408 respondents that were called, 241 answered their mobile phones and were subsequently interviewed. From these only 61 met our inclusion criteria. An additional 21 respondents were interviewed at Harambee, and 11 were suitable for our study. Attempts were made to contact all eligible respondents in order to confirm their participation. However, 26 respondents neither answered our phone-calls nor responded to our confirmation SMS. In addition, 3 respondents could not come owing to transport issues, and 14 of the confirmed respondents did not arrive at the study.

As a result, we recruited a final sample of 29 participants, 12 of which were male and 17 female, aged 18 to 34 years (M= 26.62, SD = 4.46). As our sample needed healthy participants in order to set norms, the averages for depression, alcohol abuse and PTSD screening measures were all below the cut-off for a diagnosis of these disorders. These include: PHQ-2 (M= 1,86; SD = 1,17); PHQ-9 (M= 6,8; SD =2,17); AUDIT-C (M= 1,34; SD = 1,39); and the PC-PTSD (M= .77; SD = .81). None of the participants had taken drugs in the last 12 months. These results reveal that scores obtained for the IAPS and SA-APS will not be affected by these disorders.

Hypothesis Testing

Hypothesis 1. This hypothesis sought to determine whether valence and arousal scores for the original IAPS obtained from lower SES SA participants were statistically significantly different from the norms published in the original version. Assumptions of normality, homogeneity of variance and independence were upheld. Skewness and kurtosis fell within the generally accepted range of +/-2, which revealed that for valence and arousal, normality was upheld (George & Mallery, 2010).

The mean and standard deviations for all participants' responses were obtained (see Appendix M). There appears to be a non-sensical pattern amongst arousal scores pertaining to IAPS images as arousal scores need to vary from low to high arousal (see Figure 1). From this information, arousal will be excluded from further analyses. In contrast, aligned with U.S. norms and the valence spectrum, valence scores vary from negative to positive. This is supported by a strong overall congruence between the U.S. norms and SA participants' ratings of the original IAPS, $r(28)$= .913 (see Figure 2).

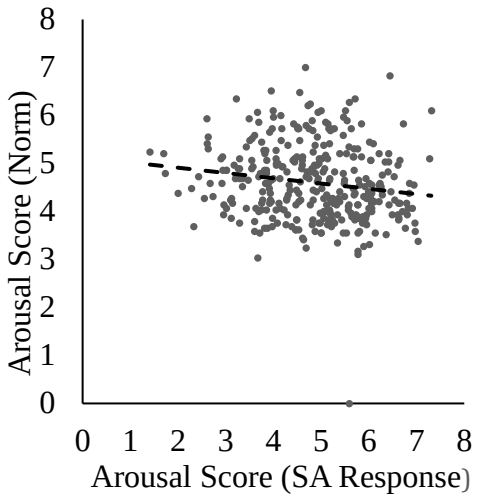

Figure 1. Relationship between U.S. Norms and SA responses to IAPS images for the arousal dimension. Pearson's r= - .168

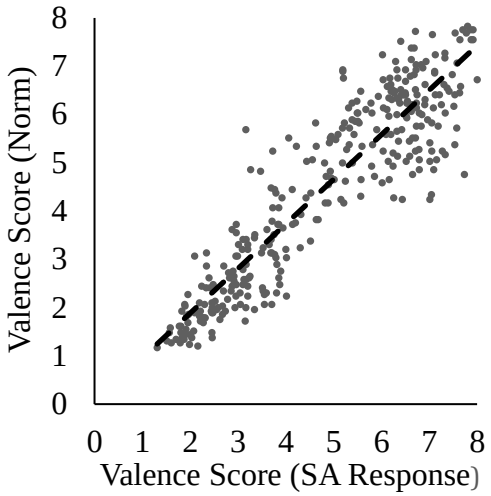

Figure 2. Relationship between U.S. Norms and SA responses to IAPS images for the valence dimension. Pearson's r= .913

In order to detect more subtle differences with regard to individual pictures, 340 non-directional, one-sample *t*-tests were conducted using Bonferroni adjusted alpha levels of .00015 to control for Type 1 error. Results indicate that 41 images rated by our sample were statistically significantly different from U.S. norms (see Appendix N). Of these 41 images, 24 fall within a different valence category as compared with U.S. norms. As significance testing can often be misleading when comparing scores obtained from a small sample size, the effect size for each image was obtained (Neill, 2008).

Effect size was calculated in terms of Cohen's (1988) conventions, which showed that 66 images had a moderate to large effect size ($.50 \leq d < .80$) and 41 images had a large effect size ($d \geq .80$) (see Appendix N). Of the 41 images that had a large effect size, 33 were also statistically significant and 15 fell within a different valence category as compared with U.S. norms. Effect size findings reveal that 107 IAPS images rated by SA participants showed substantial differences in effect in comparison with the norms.

Our small sample had limited power to find significant results. Although we did look at effect sizes, this research is exploratory in nature so we decided, in addition to statistical methods, to explore the data via visual inspection. This revealed that SA participants as compared with U.S. norms rated 78 IAPS images in different valence categories. For example, an image of: Sport was positive for norms and neutral for SA participant responses, Police was negative for norms and neutral for SA participant responses, and Nature was positive for norms and neutral for SA participant responses (see Figure 3; Appendix O). The

valence categories comprise mean responses ranging between: 1 and 3.99 for negative, 4 and 5.99 for neutral, and 6 and 9 for positive. A comparison of these 78 images with the original IAPS norms indicates that of these images, 10 were negative, 23 were neutral and 45 were positive. In terms of the way SA participants rated these pictures, their ratings for the images revealed that: 10 were negative, 55 were neutral, and 13 were positive. This indicates that many positive images are being rated as neutral and the highest discrepancy falls within the positive valence category.

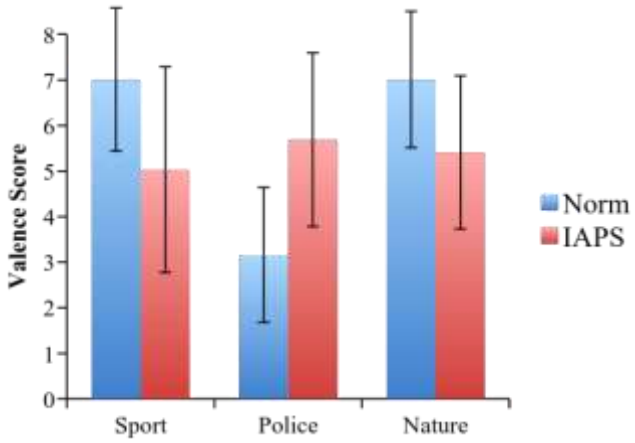

Figure 3. Mean valence response for US Norms and SA response toward IAPS images. Error bars represent standard errors.

Hypothesis 2. The second hypothesis for this study predicted that the SA-APS would evoke valence and arousal scores similar to U.S. norms. As with Hypothesis 1, assumptions of normality, homogeneity of variance and independence were upheld. Means and standard deviations were obtained for 340 images, of which 88 were adopted from the IAPS owing to the universality of these images (see Appendix P). In terms of arousal, a non-linear relationship exists between responses to the SA-APS and U.S. norms (see Figure 4). However, U.S. norms and SA participants' ratings of the SA-APS had a strong positive correlation in terms of valence (r= .914; see Figure 5). Once again, unlike valence, the arousal scores did not follow the expected distribution and as a result this dimension was excluded from further analyses.

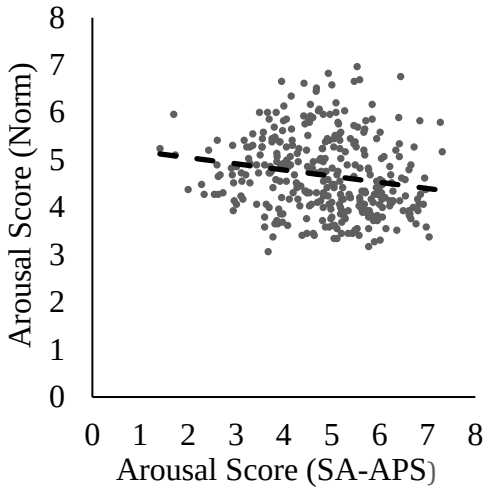

Figure 4. Relationship between U.S. Norms and SA responses to SA-APS images for the arousal dimension. Pearson's r= - .184

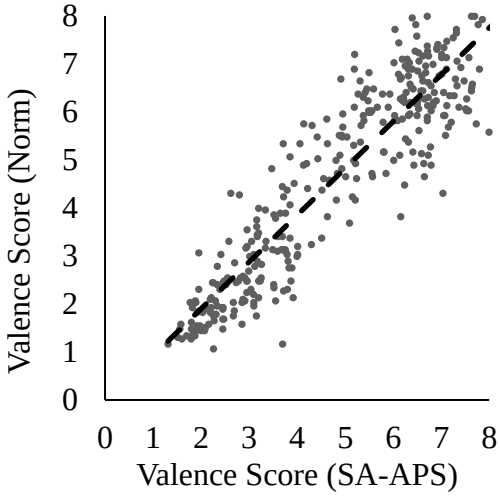

Figure 5. Relationship between U.S. Norms and SA responses to SA-APS images for the valence dimension. Pearson's r= .914

To investigate whether more subtle differences with regard to individual pictures exist, 252 non-directional one-sample *t*-tests were conducted using Bonferroni adjusted alpha levels of .00012. Findings revealed that 33 images were statistically significantly different between SA responses to the SA-APS and U.S. norms (see Appendix Q). This indicates that 33 images do not support Hypothesis 2, as the two rating sets are dissimilar. Of these, 16 *t*-tests were statistically significantly different from U.S. norms for 148 IAPS images that were replaced with images of individuals representative of a SA population. The remaining 17 *t*-tests that were statistically significantly different were for images modified in terms of sociocultural scenes. Results from the *t*-tests indicate that, for the most part, the SA-APS valence dimension appeared equivalent for SA participants.

However, effect size needs to be calculated for our study in order for meaningful differences, if any, to be detected. This calculation revealed that 70 images had a moderate effect size ($.50 \leq d < .80$) and 43 images had a large effect size ($d \geq .80$). This indicates that perhaps a much larger proportion of images still need to be reworked.

In terms of visual inspection, 24 SA-APS image equivalents were rated in different valence categories as compared with U.S. norms (see Appendix R). Of these, ratings demonstrate that: 1 image was negative, 15 images were neutral, and 8 images were positive. In comparison, U.S. norms revealed that: 6 images were negative, 9 images were neutral, and 9 images were positive. SA participants' responses to these 24 IAPS images were aligned

with U.S. normative ratings, indicating that these 24 SA-APS images were not appropriately matched.

Comparison between Hypothesis 1 and 2. Of the 41 *t*-tests that are statistically significantly different for the IAPS, as rated by SA participants, 9 *t*-tests were still significant when replaced with an SA-APS equivalent. This indicates that IAPS image: Man in Pool (2055, 1); Erotic Nude Male (4520); Biker on Fire (8480); Runners (1440); Mutilation (3017); Mountain Storm (5814); Sailing (8080); Musician (2487); and Attractive (4532) are still not equivalent for a SA sample despite attempts at culturally relevant modifications. However, 32 images were not significantly different after using SA-APS equivalents. In total, when compared with U.S. norms, there were fewer statistically significant *t*-tests in response to the SA-APS (n =33) as opposed to the IAPS (n =41). Although this difference is not large, and there is room for improvement in terms of content modification, these findings reflect that progress has been made.

In addition, 53 images that had a moderate or large effect size for SA participant responses to the IAPS had a small effect size for SA participant responses to the corresponding SA-APS images. The inverse was found for 57 SA participant responses, whereby responses to SA-APS images that had a medium and large effect size, had a small effect size for SA participant responses to corresponding IAPS imagery. This indicates that whilst SA responses toward SA-APS images were similar to U.S. norms for 53 images, in comparison to their corresponding IAPS image, more images were meaningfully different (n= 57) when modified.

Of the aforementioned 78 IAPS images that proved categorically different along the visual inspection dimension, 66 were redeveloped and of these corresponding SA-APS images, 31 rendered scores comparable to IAPS norms (see Appendix O & S). For example, a single image of: Sport was positive for U.S. norms, neutral for IAPS responses and positive for SA-APS responses, Police was negative for U.S. norms, neutral for IAPS responses and negative for SA-APS responses, and Nature was positive for U.S. norms, neutral for IAPS responses and positive for SA-APS responses (see Figure 6).

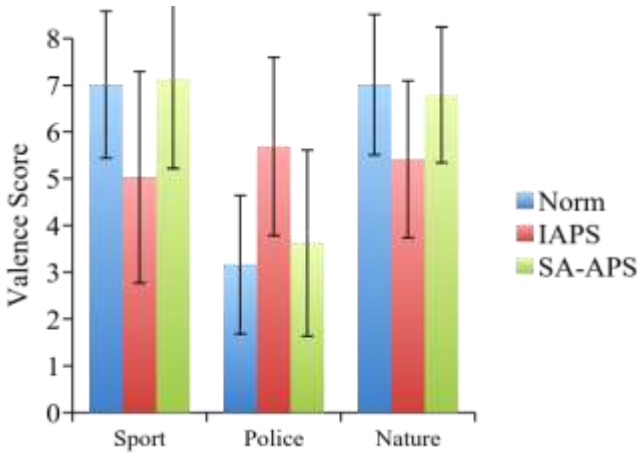

Figure 6. Mean valence response for U.S. Norms and SA response toward IAPS images as well as SA response toward SA-APS image equivalent. Error bars represent standard errors.

Discussion

The present study set out to explore whether a culturally relevant adaptation of the IAPS, the SA-APS, would render SA participant responses equivalent to U.S. norms. As there have been conflicting results about the cross-cultural efficacy of the IAPS, and studies have supported that emotion differs cross-culturally in how it is elicited, our study predicted that (1) the IAPS would evoke valence and arousal scores in SA participants that are significantly different from the norms published in the original version; and (2) the SA-APS would evoke valence and arousal scores similar to those obtained by the original IAPS for a Westernised population. To assess these hypotheses, we recruited 29 SA participants from a lower SES, and presented both an IAPS subset and the SA-APS. The correlation between U.S. norms and SA responses to the IAPS, as well as U.S. norms and SA responses to the SA-APS were extremely strong. However, item-by-item significance testing, effect size calculations and visual inspection revealed that many images are rated differently from U.S. norms. This has interesting implications for existing studies, such as Ribeiro et al. (2005) and Drače et al, (2013) for example, which have relied solely upon overall statistical tests to validate the IAPS, without running such item-by-item analysis.

Hypothesis 1: Do SA participants rate the IAPS congruent with U.S. norms?

Arousal scores did not perform as expected- that is there was no spread of arousal values from low arousal to high arousal. All statistical tests were therefore run only on the valence dimension for this study. This observation is similar to that reported by Ribeiro et al. (2005), suggesting that the concept of arousal could have been misunderstood by a population unfamiliar with psychological jargon. Moreover, individuals vary in their ability to identify this aspect of their subjective experience and unlike the valence dimension; there

is a lack of consensus surrounding the definition of arousal (Barrett, Mesquita, Oschsner, & Gilet & Jallais, 2012; Gross, 2007). Therefore, despite the use of graphic figures in the SAM, the semantic obstacles of the instructions were not overcome.

In terms of statistical analyses, the strong correlation between U.S. norms and SA responses to the IAPS was surprising as existing theory about the appraisal of emotionally evocative imagery, as well as the process of acculturation, led us to anticipate that culture, SES, and education would impact on our sample's response to Western imagery (Groefer & Tan, 2003; Kan et al., 2014; Spaull, 2013). Further analyses did not support our first hypothesis, as only 41 SA responses to IAPS images were statistically significantly different from normative data. This finding was aligned with Hu et al. (2005) who found significant affective differences between Chinese and American adults with regard to specific picture content. However, as our study sample comprised of young individuals (M= 26.621, SD = 4.455), our overall results were similar to Kwon et al. (2009) who found that in a Korean sample young participants did not differ from normative data whilst an older generation differed significantly.

More than half of these significant *t*-tests (n= 24) revealed that the images were rated in different valence categories as compared with U.S. norms. General trends centre on education, nature and extreme sports. For example, SA participants as compared with neutral U.S. norms rated images pertaining to education such as Woman_Reading and Book as positive. In addition, although there were few statistically significant *t*-tests, potentially the consequence of our small sample size, 15 large effect sizes corroborated this finding. Visual inspection further revealed that our sample had mean valence categorical ratings inconsistent with normative data for 78 images. Effect size testing and visual inspection therefore supported the aforementioned trends detected through *t* –tests. However, these methods also highlighted other trends including erotic imagery and wildlife. Trends will be explored in detail within *Comparison between U.S Norms and SA Responses to the IAPS and SA-APS.* Images that did not work in accordance with the valence spectrum suggest that although our hypothesis was not supported, the cross-cultural efficacy of the IAPS is still questionable.

Hypothesis 2: Do SA participants rate the SA-APS congruent with U.S. norms?

Responses to the SA-APS were strongly correlated with U.S. norms. This overall finding, together with the small number of 33 statistically significant *t*-tests, suggests that for the most part, the SA-APS was able to evoke valence scores similar to U.S. norms. However, there were 113 moderate and large effect sizes, which indicate that although adapting images was useful, caution must be applied as some content-changes elicited more positively or

negatively valenced responses than anticipated. While these images need work, it was through visual inspection that we were able to better assess that adapting images to suit a target population is a worthwhile endeavour. The advantage of reworking IAPS imagery was evidenced by the 31 redeveloped images that rectified the aforementioned valence discrepancy, in Hypothesis 1, rendering SA responses congruent with U.S. norms.

As the IAPS predominantly comprises images of white individuals, the SA-APS mainly used images of black individuals to present more socioculturally relevant stimuli to our sample. We had anticipated an in-group/out-bias and therefore (1) responses toward IAPS images would be statistically significantly different from normative data; and (2) making such changes would result in responses to the SA-APS being equivalent to normative data. From a social psychological perspective, the emotional appraisal of different racial groups is complex. Brewer (1999) indicates that "the familiar is preferred… but there is not necessarily hostility against" (p.429) out-group members. The few significant *t*-tests indicate that participants did not rate images of white individuals and black individuals significantly differently. However, of the 148 SA-APS images that were modified only in terms of racial profile, approximately half had a medium and large effect size. This finding suggests that images of individuals modified by skin colour had impacted on valence response even though half the images were notably different from U.S. norms. These images were therefore not functioning as we had expected. The change in demographic content may have evoked greater sensitivity in the form of stronger valence responses, as a result of a preference-bias, thereby rendering some valence scores non-comparable with U.S. norms.

Comparison between U.S. Norms and SA Responses to the IAPS and SA-APS

Visual inspection revealed that although erotic imagery was modified in terms of racial profile, SA participants were more conservative in their response toward erotic IAPS and SA-APS imagery than their American counterparts, having predominantly neutral valence ratings. This finding is similar to Hu et al. (2005) who identified this trend amongst a Chinese sample. In addition, SA participants rated IAPS imagery of extreme sports as neutral in contrast to content-appropriate SA-APS images, such as soccer. The positive valence scores toward familiar images matched normative data on extreme sports. Similarly, responses toward environmental settings in South Africa were rated as positive thereby matching IAPS norms.

Despite this trend, SA wildlife images were not equivalent. This valence discrepancy was also applicable to the corresponding IAPS wildlife images, for example, where an otter was replaced with a monkey. Images depicting food, clothing, transport, and education had

positive ratings as compared to neutral normative data. Positive ratings toward basic needs and taken-for-granted privileges may reflect the economic disparity between our SA sample and U.S. college students (Van der Berg, 2010; Yu, 2015). This also suggests that whilst matching in terms of picture content has worked for many images, sourcing SA replacements of certain categories like wildlife, food, clothing, transport and education will not function appropriately in terms of valence response regardless of familiarity. This indicates that some pictures will have no thematic equivalent, and to keep the psychometric properties, will need to be replaced with entirely different images.

Overall, the most problematic valence category for the IAPS appeared to be positive images. Many positive IAPS images according to U.S. norms were rated as neutral by the SA sample. Kuppens, Diener, and Realo (2008) suggest that differences in positive affective response result from having attached meaning to life experiences. Culture and its inherent values therefore mediate one's hedonistic ideals. Negative images featured least within this list of valence discrepancy, which is aligned with Grühn et al. (2007) who asserted that this category of images is more likely to be understood in a similar manner cross-culturally. The trends in valence discrepancy were mirrored in the SA-APS. However, there were far fewer images with a valence discrepancy in the SA-APS, which could result from redeveloping images to suit the sample's culture.

However, statistical tests revealed that although the ratings for most negative images fell within the correct valence category on both the IAPS and SA-APS according to U.S. norms, their ratings for 18 images were still significantly different from normative data. Rates of violence in South Africa are high, especially amongst low SES individuals (Bhorat, 2015). Literature has supported that increased exposure to violence results in a desensitization toward violent acts and stimuli (Mrug, Madan, & Windle, 2015; Stavrou, 1993). Therefore, with South Africa having one of the highest rates of violence worldwide, it is surprising that our sample showed higher levels of sensitivity toward these images (Harris & Vermaak, 2015). Mullin (1995) however noted that re-sensitization has been under-reported and under-researched within psychological literature as the goal of many therapeutic interventions is aimed at desensitization. To date, literature surrounding this topic is scarce and future research into effects of re-sensitization could perhaps account for this finding. This issue of sensitivity was also demonstrated by images of political, value-laden events. Examples of this include matching an IAPS image of a soldier returning from war with an SA-APS image of Nelson and Winnie Mandela, and an IAPS image of a biker on fire with an

image of a xenophobic attack (see Appendix T). This evidence suggests some images still need to be reworked taking this issue of sensitivity into account.

Limitations

Recruiting Participants. According to Cohen's power estimates, a sample of 60 would be sufficient to determine whether differences between images in varying categories would be significant (Mikels et al., 2005). Our small sample size reduced our statistical power to support our hypotheses. As a result, few significant *t*-tests were detected in comparison to the large amount of images that were notably different when examining effect sizes and through visual inspection. Numerous factors could account for this sample size, one of which is that we had to exclude most respondents on the basis of our PTSD and Depression screenings. PTSD is high amongst individuals living in low SES environments, as they are likely to experience high levels of trauma, either directly or indirectly, which results in PTSD symptomatology (Stavrou, 1993). Depression is also highly prevalent in these communities as poverty and its associated difficulties often result in low mood.

Another factor could be the use of psychometric screening tools that were developed within a Western context. Although reliable and valid, these tools may not accurately reflect the mental health of respondents within this socio-cultural context. Additionally, the actual diagnostic category of PTSD rendering PTSD symptomatology abnormal may be problematic within this context. Examples from the PC-PTSD include: "being constantly on guard, watchful, or easily startled" and "going out of your way to avoid situations that remind you of [an event that was frightening horrible or upsetting]." The distressing events that occur within these communities are continuous and it is reasonable for high-risk situations to be avoided.

The Actual Experiment. Imagery is a non-verbal language, and therefore it was assumed that removing the culture bias within IAPS content, would allow for an accessible scale to assess emotion for a low SES of South Africa (Fernald, Marchman, Weisleder, 2013). However, Foxcroft (2004) noted that when developing a test in a multicultural context, such as South Africa, test developers should be representative of the target sample. However, the current developers were white, females. As a result, the SA-APS may be inherently biased in terms of content-matching.

A focus group comprising individuals representative of the target population for the image subset should prove helpful in redeveloping the images, instructions, and the test-taking process. This could improve on images that were statistically significantly different from normative data both within the IAPS and SA-APS. In addition, the problem with the

arousal dimension could be rectified upon gaining insight into how best to express and test arousal.

As a psychological construct, the concept of *arousal* does not have an equivalent translation in isiXhosa, which was the first language of most participants. While we tried to overcome this language barrier by using alternative translational explanations to demonstrate the continuum, such as *excited* or *fearful* versus *bored* or *calm*, as well as the SAM graphic rating scale, it was evident that this dimension was still problematic. Dufey, Fernandez, & Mayol (2011) have highlighted difficulties with the arousal dimension by noting that this dimension is particularly sensitive to cultural difference. The participants' unfamiliarity with test-taking procedures, the aforementioned language barrier, abundance of administrative instructions, large set of imagery and extensive concentration required, may have contributed to this misunderstanding of the arousal dimension.

Future Research

Prior to redeveloping IAPS imagery, the efficacy of the selected IAPS subset should be tested, and only problematic images should be modified. Moreover, we encourage future studies to focus on a specific demographic within the diverse population of South Africa. This present study only recruited participants from a lower SES in the Western Cape and future research could therefore benefit from expanding this sample. We recommend that each study recruit participants in terms of a particular demographic.

Many international studies have thus far focused specifically on intergenerational, gender, or cross-cultural differences and similarities. As our sample consisted of urbanised individuals it would also be of value to recruit individuals from rural communities in order to further test the efficacy of the IAPS. We had anticipated that recruiting a lower SES sample would ensure limited acculturation owing to scarce resources for education. However, we did not account for the effects of urbanisation. Individuals who are urbanised are potentially more acculturated to Western perspectives, and studies internationally have accounted for their findings, in support of the efficacy of the IAPS cross-culturally, on the basis of acculturation (Kwon et al., 2009). Information obtained from individuals who are not urbanized could potentially support our first hypothesis that IAPS imagery would evoke significantly different responses in our sample as compared with U.S. norms.

Implications

Emotion is integral to everyday life, and its inescapable nature has necessitated the development and use of psychometric tools for its study (Strongman, 2003). The IAPS is used widely to assist researchers in understanding concerns surrounding emotional health and

development by comparing responses to normative standards. Having a culturally relevant tool that reliably assesses emotional processes would prove useful for both normal and clinical populations within our local context. Although this study did not develop a measure that works for a SA population, it has managed to pool together data, which can be set towards a SA normative standard for this measure. Being the first of its kind to redevelop the IAPS for a target population, this study has provided a foundation for a culturally relevant tool in South Africa to measure emotional processing outside of a Western context (Bradley & Lang, 2008). Furthermore as a research tool, future improved versions of the SA-APS will make studies of emotion not only valid in a SA context, but also comparable with the large body of international studies that use the IAPS.

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Appendix A

Newspaper Advertisement

PICTURE STUDY

We need people who are:

- Between 18-35 years old
- Speak English
- Available 15 or 16 August

What it entails:

- 10 minute telephonic screen
- 2.5 hour image presentation and ratings

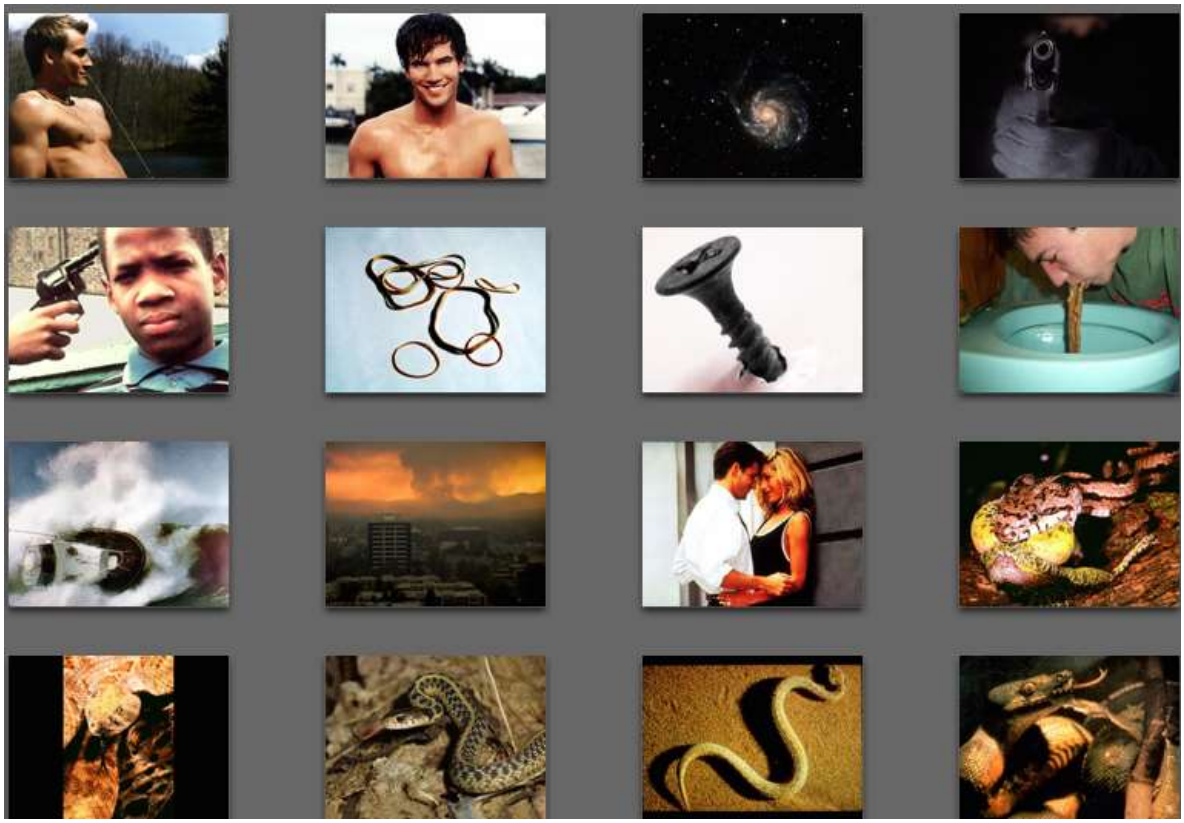
Benefits:

- You will be compensated R110 in Shoprite vouchers

SMS your age and name to 076 447 5345

Appendix B

IAPS Examples



Appendix C

Example of Random Number Set:

Neutral

264 17 174 289 265 102 88 64 319 270

8 294 115 54 225 311 80 100 287 299

121 279 9 292 73 233 223 204 321 130

101 132 72 281 135 158 318 108 261 253

29 218 260 141 162 10 134 165 99 160

242 296 184 194 267 167 51 69 178 272

28 143 257 189 219 181 74 325

	A	B	C	D	E	F	G	H	I	J	K
1	\f0\fs24 \cf0 d	IAPS	valmn	valsd	aromn	arosd	dom1mn	dom1sd	dom2mn	dom2sd	set\
2	Lamp	7175	4,87	1	1,72	1,26	6,47	2,04	.	.	10\
3	Basket	7010	4,94	1,07	1,76	1,48	6,7	1,48	.	.	1\
4	Spoon	7004	5,04	0,6	2	1,66	6,74	1,99	.	.	9\
5	Shoes	7031	4,52	1,11	2,03	1,51	6,14	2,12	.	.	10\
6	Fan	7020	4,97	1,04	2,17	1,71	6,16	2,15	.	.	9\
7	Hammer	7110	4,55	0,93	2,27	1,7	6,07	1,86	.	.	10\
8	Tissue	7950	4,94	1,21	2,28	1,81	6,3	2,11	.	.	9\
9	AbstractArt	7187	5,07	1,02	2,3	1,75	6,1	2,04	.	.	10\
10	Fork	7080	5,27	1,09	2,32	1,84	7,04	1,84	.	.	1\
11	Bowl	7006	4,88	0,99	2,33	1,67	6,18	1,96	.	.	8\
12	Building	7491	4,82	1,03	2,39	1,9	5,93	1,96	.	.	9\
13	Man	2190	4,83	1,28	2,41	1,8	5,92	2,01	.	.	4\
14	RollingPin	7000	5	0,84	2,42	1,79	6,14	2,14	.	.	2\
15	Window	7490	5,52	1,41	2,42	2,23	5,81	2,1	.	.	4\
16	ClothesRack	7217	4,82	0,99	2,43	1,64	6,25	1,86	.	.	8\
17	Chess	2840	4,91	1,52	2,43	1,82	5,56	1,93	.	.	6\
18	Rocks	5130	4,45	1,13	2,51	1,72	5,84	1,98	.	.	10\
19	TrashCan	7060	4,43	1,16	2,55	1,77	5,85	2,1	.	.	2\
20	Plant	5740	5,21	1,38	2,59	1,99	6,27	2,21	.	.	10\
21	Baskets	7041	4,99	1,12	2,6	1,78	.	.	6,35	2,14	14\
22	Umbrella	7150	4,72	1	2,61	1,76	5,55	2,01	.	.	2\
23	Book	7090	5,19	1,46	2,61	2,03	6,65	2,03	.	.	1\
24	EmptyPool	9360	4,03	1,38	2,63	1,75	5,34	2,08	.	.	10\
25	NeutGirl	2440	4,49	1,03	2,63	1,7	5,97	1,89	.	.	10\
26	PicnicTable	7026	5,38	1,26	2,63	1,93	6,19	1,76	.	.	19\
27	AbstractArt	7185	4,97	0,87	2,64	2,04	6,13	2,02	.	.	10\
28	Cabinet	7705	4,77	1,02	2,65	1,88	6,39	2,09	.	.	11\
29	ElderlyMan	2480	4,77	1,64	2,66	1,78	5,33	2,09	.	.	9\
30	Mug	7035	4,98	0,96	2,66	1,82	6,39	1,94	.	.	8\
31	DustPan	7040	4,69	1,09	2,69	1,93	5,46	1,64	.	.	5\
32	Stool	7025	4,63	1,17	2,71	2,2	6,1	2,2	.	.	8\
33	Woman	2620	5,93	1,63	2,72	2,16	6,11	2,21	.	.	4\
34	Keyring	7059	4,93	0,81	2,73	1,88	.	.	6,22	1,98	16\

... neutral unpleasant-calm unpleasant-aroused Sheet2

Appendix D

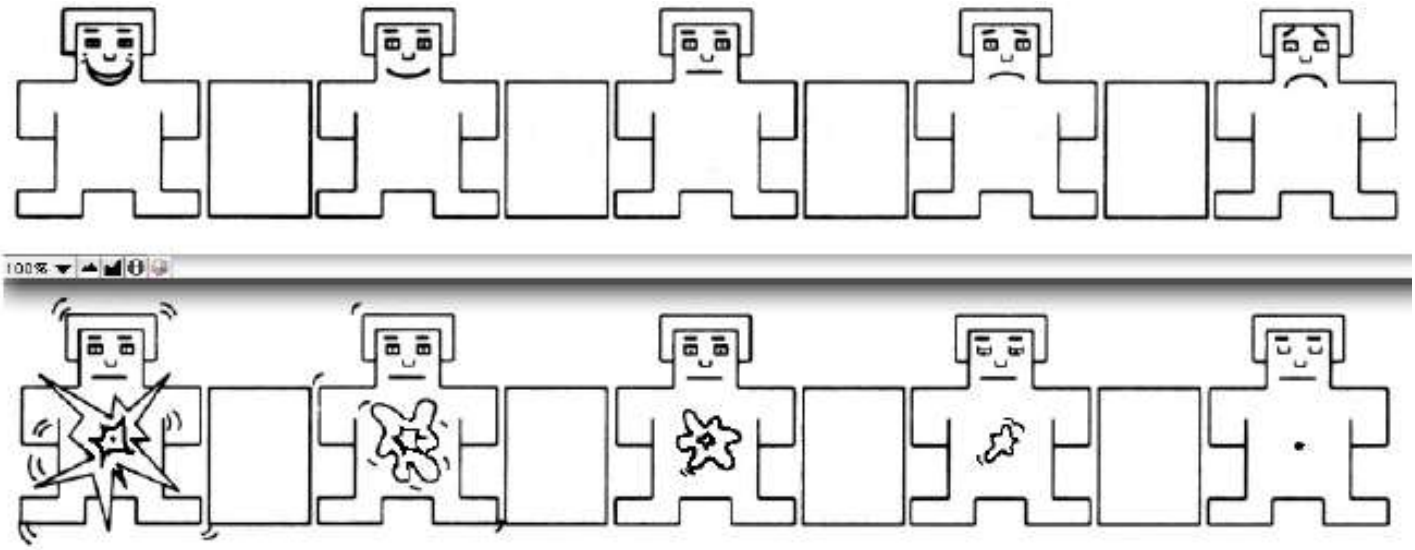
Example of Images within the IAPS and SA-APS

IAPS Images **SA-APS Images**

Appendix E

Self-Assessment Manikin: Valence and Arousal

Scoring: Participants will evaluate which graphical figure along each continuum best represents their emotional response to the images.



Appendix F

Informed Consent Dialogue – Telephonic Screen Pilot

Hello _____ Number: _____

Thank you for SMSing us that you are interested in the picture study. If you don't mind we will tell you a bit about the study. Feel free to interrupt at any point. Are you still interested in this study? (wait for response)

As you know from the advertisement our research aims to understand emotions by using pictures. You will be viewing images, which range from happy to sad, and calm to excited over the course of 2 and a half hours at the University of Cape Town. You will need to participate both next Saturday and following Saturday in order to receive R160 in Shoprite vouchers. Both sessions will require you to do the same thing. If you only participate next week you will be given R50, of course if you come back the next session you will get R110.

If you would like to continue there are a few questions we need to ask you that will take no more than 6 minutes to see whether you can participate? This screen is a necessary component to complete if you want to have a chance of being part of this study. These screens do not guarantee your participation in the study and will not be compensated for, however, if you are selected, you will be given your Shoprite voucher as compensation for your time spent completing our study.

All information you tell us will remain confidential, and there are no known risks for answering these questions. Just a reminder that this is completely voluntary and you can stop at any point in time. Feel free to ask any questions along the way.

Do you consent to continuing with questions? Yes (carry on with screenings); No (thank you for your time, if you do change your mind please notify us)

Signature line: yes

Okay great, First, I will ask you a question and give you four options, please say which one you agree with.

1) Over the past two weeks, how often have you felt little interest or pleasure in doing things?

   Option 1: Not at all?

   Option 2: Several Days?

   Option 3: More Than Half the Days?

   Option 4: Nearly Every Day?

2) Over the past two weeks how often have you felt down, depressed, or hopeless?

   Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

_____ (If score 3 or 4 do PHQ-9)

Over the last 2 weeks, how often have you had trouble falling or staying asleep, or sleeping too much?

Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

Over the last 2 weeks, how often have you felt tired or had very little energy?

Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

Over the last 2 weeks how often have you had a poor appetite or were overeating?

Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

Over the last 2 weeks how often have you felt bad about yourself – or that you are a failure or had let yourself or your family down?

Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

Over the last 2 weeks how often have you had trouble concentrating on things, such as reading the newspaper or watching television?

Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

Over the last 2 weeks how often have you been moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety or restless that you have been moving around a lot more than usual?

Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

Over the last 2 weeks how often have you had thoughts that you would be better off dead, or of hurting yourself?

Option 1: Not at all?

Option 2: Several Days?

Option 3: More Than Half the Days?

Option 4: Nearly Every Day

---

3) How often did you have a drink containing alcohol in the past year?

   Option 1: Never

   Option 2: Monthly or less

   Option 3: 2-4 times per month

   Option 4: 2-3 times per week

   Option 5: 4 or more times per week

4) How drinks did you have on a typical day when you were drinking in the past year?

   Option 1: 1 or 2

   Option 2: 3 or 4

   Option 3: 5 or 6

   Option 4: 7 to 9

   Option 5: 10 or more

5) (If female): How often have you had 6 or more drinks on a single occasion in the last year?

(If male): How often have you had 8 or more drinks on a single occasion in the last year?

Option 1: never

Option 2: less than monthly

Option 3: monthly

Option 4: weekly

Option 5: daily or almost daily

Now please just say yes or no to the following questions:

6) Are you currently using or have used any drugs in the last 12 months? Yes/No

7) Are you taking any medicine? Yes/No, (if yes: what is it? _____)

8) In your life, have you ever had any experience that was so frightening, horrible, or upsetting, that in the past month you:
   Have had nightmares or thought about it when you didn't want to? Yes/No
   Tried hard not to think out it or went out of your way to avoid situations that reminded you of it? Yes/No
   Were constantly on guard, watchful, or easily startled? Yes/No (sometimes on guard)
   Felt numb or detached from others, activities, or your surroundings? Yes/No

Thank you for answering these questions! We will SMS you to let you know whether or not you can be a part of this study, where the study is and time of the study. Have a GOOD DAY!

Appendix G

Confirmation SMS

PICTURE STUDY: Hello ____, we would like to confirm that you will be coming on Saturday 15th August to the University of Cape Town. Be here at 8:45am. Meet at Jameson Hall (Upper Campus). The study will take no more than 2 and half hours and you will be given snacks and refreshments as well as the R110 Shoprite voucher. Please SMS 'yes' to confirm that you are coming. If you have any questions please send a 'please call me'. Kind regards, Kaylee and Ashleigh

Appendix H

Informed Consent Document

Informed Consent to Participate in Research and Authorization for Collection, Use, and Disclosure of Emotional Processing, Performance on the Self-Assessment Manikin and Other Personal Data

You have been invited to take part in a research study. This form gives you information about the study and asks for your consent for the collection, use and disclosure of your emotional processing ratings, gender and age, as well as other information necessary for the study. The Principal Investigators (the people in charge of this research) will also describe this study to you and answer all of your questions. Your participation is entirely voluntary. Before you decide whether or not to take part, please read the information below and ask questions about anything you do not understand. For your information – this study is covered by UCT's No Fault Insurance Policy.

1. Name of Participant

_____

2. Title of Research Study

Developing a South African Affective Picture System

3. Principal Investigators and Telephone Numbers

Ashleigh Nestadt and Kaylee Kantor
University of Cape Town (UCT)
Contact number: 084 411 9000 and 082 568 3192

4. What is the purpose of this research study?

This research aims to investigate how certain images make you feel.

5. What will be done if you take part in this research study?

In this experiment, you will be presented with a set of emotionally evocative images. You will be asked to rate how you feel about each picture on the computer in front of you. There will be a short break of 10 minutes please raise your hand when the break slide appears on the computer screen. During this break you will be provided with food and refreshments. After the entire measure has been assessed, we will do a short debriefing and the study will be complete. Verbal instructions detailing this procedure will be read out shortly after you have completed this form.

6. If you choose to participate in this study, how long will you be expected to participate in the research?

Two and a half hours

7. What are the possible discomforts and risks?

Some images might be scary, remind you of horrible things or make you uncomfortable. This is a temporary feeling and will go away.

8. What are the possible benefits to you?

Participation in this study may improve your understanding of emotions and teach you a little bit about the research process.

9. What are the possible benefits to others?

The information from this study may help researchers better understand emotions in South Africa and contribute to creating a measure to assess emotions. Having this measure could ultimately improve emotional health within South Africa and contribute to a wider set of research pertaining to the IAPS universally.

10. If you choose to take part in this research study, will it cost you anything?

Participating in this study will not cost you anything.

11. Will you receive compensation for taking part in this research study?

You will receive financial compensation in the form of an R110 Shoprite voucher.

12. Can you withdraw from this research study?

You do not have to give consent and you can stop participating in this research study at any point. If you do withdraw your consent, there will be no penalty.

If you have any questions regarding your rights as a research subject, you may phone Rosalind Adams at the Psychology Department offices on 021-650-3417. You may also contact the Human Research Ethics Committee at 021-406-6626 or email: shuretta.thomas@uct.ac.za.

13. If you withdraw, can information about you still be used and/or collected?

Information already collected may be used.

14. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records. These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

15. What information about you may be collected, used and shared with others?

This information gathered from you will be demographic information, information gathered from all screening measures done telephonically, and ratings in response to the picture series used within the study. None of the information can be used to identify you.

16. How will the researcher(s) benefit from your being in the study?

In general, presenting research results helps the career of a scientist. Therefore, the Principal Investigators and others attached to this research project may benefit if the results of this study are presented at scientific meetings or in scientific journals. This study is being undertaken for the Principal Investigators' Honours degree.

17. Signatures

As a representative of this study, I have explained to the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how the participant's performance and other data will be collected, used, and shared with others:

Signature of Person Obtaining Consent and Authorization Date

_____ _____

You have been informed about this study's purpose, procedures, possible benefits, and risks; and how your performance and other data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time. You voluntarily agree to participate in this study. You hereby authorize the collection, use and sharing of your performance and other data. By signing this form, you are not waiving any of your legal rights.

Signature of Person Consenting and Authorizing Date

_____ _____

Please indicate below if you would like to be notified of future research projects conducted by our research group:

_____ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I might participate in the future.

Method of contact:

Phone number:_____
E-mail address: _____
Mailing address: _____
_____

Appendix I

SAM Booklet Example

SELF-ASSESSMENT MANIKIN BOOKLET

Age: _____

Gender: Male / Female

Date: 13/06/2015

IMAGE ____

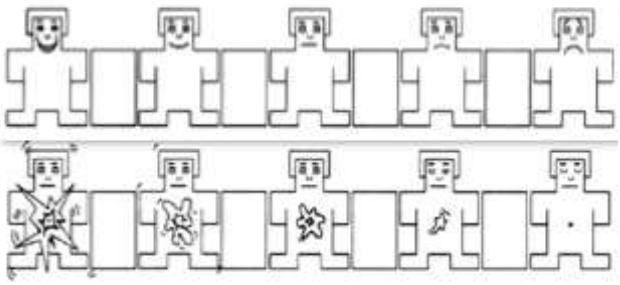


IMAGE ____

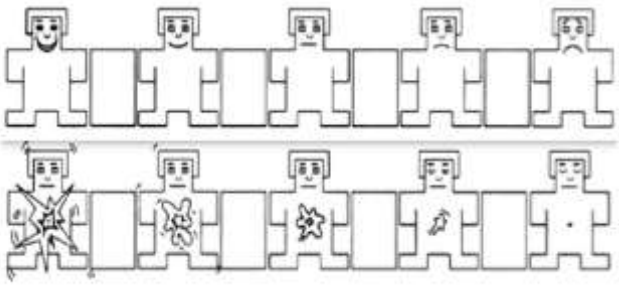


IMAGE ____

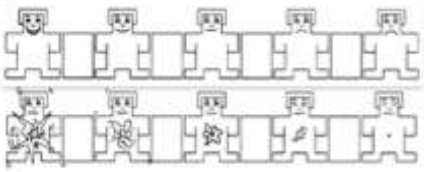


IMAGE ____

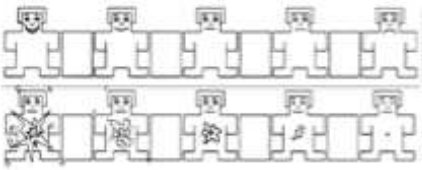


IMAGE ____

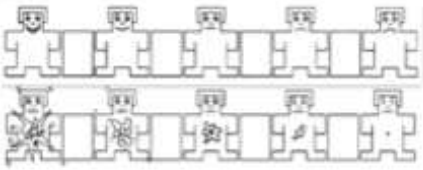


IMAGE ____

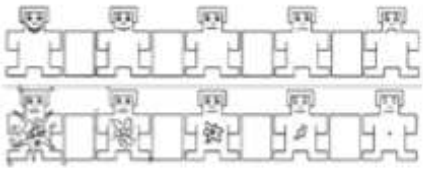


IMAGE ____

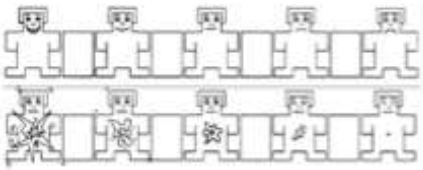
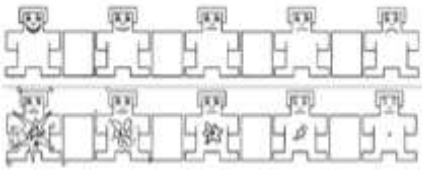


IMAGE ____



Appendix J

Instructions for Pilot Study

Before we start, I'd like you to read and sign the informed consent and demographic form that is on the table in front of you with your rating booklet.

OK, thank you all for coming today -- we appreciate your participation in the study. In this study, we want to see how people respond to pictures of different situations. For the next 40 minutes you will see different pictures on this screen in front of you. After you have seen each picture, please mark on the booklet in front of you how the picture has made you feel. There are no right or wrong answers so please respond as honestly as you can. You will be given two breaks, for 10 minutes, and we will give you food and drinks.

I want to remind you that some of the images may be very scary, horrible or upsetting so if you do not feel comfortable you can raise your hand and stop.

Now let me explain what you will need to do. First, on the first page of your ratings booklet, please circle your gender and write your age in the space provided.

We will practice with 3 images so that you can become comfortable with the study. On the second page you will see 3 sets of figures. Each figure represents a different feeling. We call these sets of figures SAM and you will use each figure to mark how you feel after seeing each picture. After seeing each picture you must mark how you feel on both the top row and the bottom row. These rows show two different types of feelings: Happy vs Unhappy, Excited vs Calm.

On the top row, the figure on the far left means you feel really happy and the figure on the far right means you feel really unhappy. On the bottom row, the figure on the far left means you feel really excited about the picture and the figure on the far right means you feel really calm about the picture.

You can see that each SAM figure varies along each row. The first SAM scale is the happy unhappy scale, which ranges from a smile to a frown. At one extreme of the happy vs. unhappy scale, you felt happy, pleased, satisfied, contented, and hopeful. If you felt completely happy while viewing the picture, you can indicate this by marking an X in the figure at the left, like this (demonstrate with SAM). The other end of the scale is when you felt completely unhappy, annoyed, unsatisfied, melancholic, despaired, bored. You can indicate feeling completely unhappy by marking an X in the figure at the right, like this (demonstrate with SAM). The figures also allow you to describe feelings in the middle of the extremes, by placing an "X" over any of the other pictures. If you felt completely neutral, neither happy nor unhappy, place an "X" over the figure in the middle. If you feel that your feeling of pleasure or displeasure falls between two of the pictures, then mark an X in the space between the figures, like this (demonstrate with SAM). This allows you to mark more accurately how you felt after seeing each picture.

The excited vs. calm dimension is the second type of feeling displayed here. At one extreme of the scale you felt stimulated, excited, frenzied, jittery, wide-awake, aroused. If you felt completely aroused while viewing the picture, mark an X in the figure at the left of the row, like this (demonstrate with SAM). On the other hand, at the other end of the scale, you felt completely relaxed, calm, sluggish, dull, sleepy, unaroused. You can indicate that you felt completely calm by marking an X in the figure at the right of the row, like this (demonstrate

with SAM).

As with the happy unhappy scale, you can represent feeling in between the extremes by marking an X in any of the other figures. If you are not at all excited nor at all calm, mark an X in the figure in the middle of the row. Again, if you wish to mark more accurately whether you feel excited or calm mark in the spaces between the pictures, like this (demonstrate with SAM).

We want to remind you that some of the pictures may remind you of sad, horrible or scary experiences; others may seem relatively neutral. Your rating of each picture should show how you personally felt immediately after seeing the image. Please rate each one AS HOW YOU ACTUALLY FELT WHILE YOU WATCHED THE PICTURE and to rate the pictures as honestly as possible.

The procedure will be as follows: Before each of the pictures is shown on the screen there will be a warning slide for 10 seconds and we will tell you what number the picture is and you must please write the relevant number in the space provided next to IMAGE____ above the set of SAM (as demonstrated). This indicates the number of the row you should use to rate the upcoming picture.

At these times, you should always make sure that the picture number corresponds to the number you will write on each page of the SAM booklet next to IMAGE ____ above each set of figures. For example, when we write picture 10 on the board (demonstrate), please make sure you write '10' on the correct line.

When you see the warning slide please make sure you quickly mark how you feel about the previous image and pay close attention to the screen. It is important that you are always looking at the screen when we show each picture. You'll have only a 6 seconds to watch each picture. Please view the picture for the entire time it is on and mark your feelings immediately after the picture is removed. If, for some reason, you should miss viewing any picture, please leave that ratings row blank.

After each picture, you'll see projected 'Please rate the picture on BOTH dimensions (demonstrate with slide). You will have 15 seconds to mark your emotional feeling towards the picture in the booklet. It is very important not to dwell on your ratings of the pictures, since there will not be much time.

We are interested in your own personal ratings of the pictures. Therefore, please don't make any comments that might influence the ratings that other people make. You can understand how this might affect or change our results.

Before we begin, here are examples of the kinds of pictures you will be viewing and rating. Right now, I'd like you to take your sample rating sheet and practice rating the following pictures, all on the same sheet. This is just to help you get a feel for how the ratings are done. (Present the practice slides)

Are there any questions before we begin? Just a reminder before we start; view the picture for the entire time it is on the screen. After the picture is off, make your ratings on ***both*** dimensions and rows as quickly as possible and get ready for the next picture. It is important that we have information from each of you on all of these pictures. Again, there are no right or wrong answers; so rate every picture on both rows as honestly as possible.

<u>After half the images have been shown – 10 minute break</u>

After 10 minute break – settle everyone and remind them: view the picture for the entire time it is on the screen. After the picture is off, make your ratings on ***both*** dimensions and rows as quickly as possible and get ready for the next picture. It is important that we have information from each of you on all of these pictures. Again, there are no right or wrong answers; so rate every picture on both rows as honestly as possible.

At the end of the experiment: We want to thank you very much for your participation today and for being a part of our study. Please remember that the study will take place again next Saturday 20 June at 10am at UCT. Next week you will be doing the same procedure however some of the images will be different. You will again be provided with food and drinks and will receive the R110 Shoprite voucher. We look forward to seeing you all next week. Should you have any questions during the week please feel free to contact us on the same number via SMS and we will get back to you as soon as possible. Enkosi, Baie Dankie and thank you ☺

Appendix K

PowerPoint Presentation

In order to present these images a PowerPoint slideshow was created by generating a set of random numbers and subsequently adding each IAPS or SA-APS image into the slideshow accordingly. Numbers 1-68 comprised of all pleasant-calm images, 69-136 all pleasant-aroused images, 137-204 all neutral images, 204-272 all unpleasant-calm images, and 273-340 all unpleasant-aroused images. The same random number generation for all 340 images was used for both the slideshow of the IAPS and SA-APS to ensure images were matched in sequence in order to control for sequence effects as well as make for more efficient statistical analyses. All images had a set timer of 6 seconds. For the practice round however, the first image was set to have no time limit so that all participants were comfortable with the viewing and rating procedure before screening the next 2 practice images. These images were presented onto a large screen in a dark room, followed by a 10 second interval whereby participants were given a chance to respond. A further 4 seconds was allowed to prepare participants prior to the next image being presented. The preparation slide included the image number that was to be copied out onto the blank line provided above each set of SAM. This was done to ensure that even if an image was missed, all data would correspond correctly to the appropriate image. The interval slide comprised of a black screen with a white X so that the participants could focus on their response. This procedure was repeated for 170 images and a warning slide stating “Thank you! The first half of the session is now complete. Please enjoy some snacks and refreshments. We will start again in 10 minutes” was displayed.

Appendix L

Instructions for Actual Study

Before we start, I'd like you to read and sign the informed consent that is on the table in front of you. I will give you 5 minutes to do this. If you have any questions please ask and we will come around (WAIT 5 MINS).

OK, than you all for coming today -- we appreciate your participation in the study. In this study, we want to see how people respond to pictures of different situations. For the next 40 minutes you will see different pictures on this screen in front of you. After you have seen each picture, please rate how the picture has made you feel. There are no right or wrong answers so please respond as honestly as you can. You will be given ONE break, for about 5-10 minutes, and we will give you some food and drinks.

I want to remind you that some of the images may be very scary, horrible or upsetting so if you do not feel comfortable you can raise your hand and stop. Now let me explain what you will need to do. First, enter your gender and age in the space provided on the screen.

We will practice with 3 images so that you can become comfortable with the study. You will see a slide that says PRACTICE ROUND. Please press the SPACEBAR on the keyboard to move to the n next slide. If you need any assistance please raise your hand.

Now you should all see an image of a scale from 1-9. Each figure represents a different feeling (REFER TO DIAGRAM ON SCREEN). We call these sets of figures SAM and you will use each figure to mark how you feel after seeing each picture. After seeing each picture you must mark how you feel on both scales. These scales show two different types of feelings: Positive or Negative, Excited vs Calm.

On the first slide, the figure on the far right means you feel really happy/positive and the figure on the far left means you feel really unhappy/negative. After you make your response, the next slide will show the Excited vs Calm scale. The figure on the far right means you feel really excited about the picture and the figure on the far left means you feel really calm about the picture. Each figure on both scales has a corresponding number on the keyboard in front of you.

The first SAM scale is the happy-unhappy scale, which ranges from a smile to a frown. At one extreme of the happy vs. unhappy scale, you felt happy, pleased, satisfied, content, or hopeful. If you felt completely happy while viewing the picture, you can indicate this by selecting the button number “9” to match the figure at the right, like this (demonstrate with SAM). The other end of the scale is when you felt completely unhappy, annoyed, unsatisfied, sad, despaired, bored. You can indicate feeling completely unhappy by selecting the button number “1” on the keyboard to match the figure at the left, like this (demonstrate with SAM). The figures also allow you to describe feelings in the middle of the extremes, by selecting the number underneath the figure which corresponds to the keyboard. If you felt completely neutral, neither happy nor unhappy, select number “5” on the keyboard. If you wish to mark more accurately whether you feel excited or calm select the number on the keyboard that matches the block between the figures on the screen.

The Excited vs. Calm dimension is the second type of feeling displayed here. At one extreme of the scale you felt stimulated, excited, frenzied, jittery, fearful, wide-awake, aroused. If you felt completely aroused while viewing the picture, press the button number “9” on the

keyboard. On the other hand, at the other end of the scale, you felt completely relaxed, calm, sluggish, dull, sleepy, unaroused. You can indicate that you felt completely calm by selecting button number "1".

As with the happy unhappy scale, you can represent feeling **in between** the extremes by selecting any number on the keyboard that matches the figure on the screen. If you are not at all excited nor at all calm, select button number "5" on the keyboard to match the figure in the middle of the row. Again, if you wish to mark more accurately whether you feel excited or calm select the number on the keyboard that matches the block between the figures on the screen.

We want to remind you that some of the pictures may remind you of sad, horrible or scary experiences; others may seem relatively neutral. Your rating of each picture should show how you personally felt immediately after seeing the image. Please rate each one AS HOW YOU ACTUALLY FELT WHILE YOU WATCHED THE PICTURE and to rate the pictures as honestly as possible.

The procedure will be as follows: It is important that you are always looking at the screen when we show each picture. You'll have only a 6 seconds to watch each picture. Please view the picture for the entire time it is on and mark your feelings immediately after the picture is removed. First you will rate how happy/unhappy/positive/negative you feel towards an image when the figures that are smiling or frowning appear. Then once you have chosen a number the next slide will appear with the excited to calm scale. Once you have chosen the number that shows how you feel about a picture, the next image will appear.

We are interested in your own personal ratings of the pictures. Therefore, please don't make any comments that might influence the ratings that other people make. You can understand how this might affect or change our results.

Before we begin, here are examples of the kinds of pictures you will be viewing and rating. Right now, I'd like you to practice rating the following three pictures. This is just to help you get a feel for how the ratings are done.

After practice image 3:

Are there any questions before we begin? Just a reminder before we start; view the picture for the entire time it is on the screen. After the picture is off, make your ratings on ***both*** scales as quickly as possible and get ready for the next picture. Again, there are no right or wrong answers; so rate every picture on both scales as honestly as possible.

<u>After half the images have been shown – 10 minute break</u>

<u>After 10 minute break – settle everyone and remind them:</u> view the picture for the entire time it is on the screen. After the picture is off, make your ratings on ***both*** scales as quickly as possible and get ready for the next picture. It is important that we have information from each of you on all of these pictures. Again, there are no right or wrong answers; so rate every picture on both rows as honestly as possible.

<u>At the end of the experiment:</u> We want to thank you very much for your participation today and for being a part of our study.

Appendix M

Table 1

Descriptive Statistics for IAPS

Picture	Mean Valence	Std Dev Valence	Mean Arousal	Std Dev Arousal
Mushroom_one	4,72	1,96	4,17	1,89
Hospital	2,28	1,85	4,38	2,81
Snake_one	2,90	2,45	4,55	3,08
Mutilation_one	1,59	1,18	3,59	3,21
SportsCar	7,17	1,83	6,07	2,31
Beach	7,62	1,27	6,34	2,50
Graffiti	3,83	1,67	3,24	1,98
WomanReadingone	6,93	1,60	5,48	2,57
EroticCoupleone	6,00	2,45	5,45	2,69
Bird	4,17	2,24	4,21	2,23
SmokePollution	2,72	2,25	3,72	2,64
OilFires	2,24	1,50	3,10	2,35
ManFeedingGiraffe	6,97	1,30	5,66	2,18
DentalExam	4,07	2,05	4,41	2,31
PancakesScones	6,34	1,29	5,03	2,26
Twins	4,69	1,26	3,93	2,00
Lion_one	6,62	2,11	5,72	2,72
Flood	4,07	2,14	4,24	2,18
Injection_one	4,45	2,23	4,03	2,31
Shark	3,03	1,61	4,14	2,64
CoupleBikes	7,83	1,56	6,10	2,61
SadGirls	3,72	2,20	3,62	2,08
Gun_two	3,03	1,95	3,59	2,58
Snake_two	2,31	1,93	3,72	3,07
WomenDrinks	4,17	2,11	3,55	2,26
ManInPool	1,72	1,53	3,76	2,92
BeachCouple	6,21	1,68	4,83	2,38
Fire_one	2,31	1,54	4,17	2,77
AbstractArt_one	3,83	1,75	3,59	2,03
EroticCoupleInBed	5,90	2,23	4,48	2,43
VideoTape	5,72	1,69	4,28	2,31
CoupleOld	7,69	1,81	5,79	2,87
Cow	3,21	2,18	4,28	2,25
Police_one	2,66	2,11	4,76	2,96
GrievingFemale	1,93	1,44	3,55	2,87
EroticNudeMale	4,34	2,57	4,59	2,90

Shopping	6,14	1,66	4,90	2,62
FatherBaby	8,03	1,68	6,48	2,60
CandyBarOne	6,86	2,13	6,21	2,34
BikerOnFire	2,07	1,94	4,34	3,46
WingWalkPlaneCarnival	4,28	2,56	4,83	2,54
Mushroom_two	4,24	1,38	4,00	1,63
Snakes_three	2,66	1,82	3,93	2,78
CarBootClampedWheel	4,83	2,02	4,48	2,26
Butterfly_one	5,14	1,98	4,07	1,93
Gang	2,34	1,40	3,83	2,69
Book	6,90	1,80	5,41	2,88
ManOnFire	1,45	0,95	4,24	3,55
Mutilation_two	1,48	1,06	4,07	3,25
CarDamage_one	3,24	2,03	3,72	2,62
Sunset_one	6,72	1,65	5,55	2,61
AimedGun_one	2,48	1,86	3,83	3,01
Bucket	4,38	1,86	4,72	2,23
Chess_one	6,24	1,72	4,79	2,73
ManFisherman	5,97	1,64	4,79	2,23
TrashCan	5,03	1,57	4,28	2,09
Family	7,76	1,38	6,07	2,53
HospitalHallway	3,72	1,69	4,24	2,46
Kids	7,24	1,72	5,72	2,39
EroticCoupleFacing	6,24	2,34	5,21	2,74
SeaMuizenbergHomes	6,55	1,35	5,59	2,20
Attack_one	1,62	1,01	4,59	3,21
Shoes	4,17	1,39	4,07	2,00
Rower	5,21	1,82	4,34	1,95
Brownie	6,45	1,78	5,38	2,26
BatteredFemale1	1,83	1,39	4,14	3,26
FamilyDinner	8,10	1,40	6,52	2,80
ManComputer	5,28	1,36	4,66	1,93
Lion_two	4,86	2,45	4,14	2,42
BatteredFemaleLying2	1,69	1,04	3,93	3,12
Mutilation_three	1,31	0,81	3,93	3,41
Chicken_two	6,31	1,77	5,90	2,13
Tornado_one	3,14	1,81	4,17	2,59
Injury	1,52	1,06	4,07	3,25
Gun_one	3,62	2,26	4,00	2,46
BabyIncubator	1,90	2,08	4,17	3,27
AssaultTorture	1,72	1,33	4,38	3,03
BurntBuilding	2,00	1,73	3,83	2,95
BloodyKiss	1,90	1,99	4,52	3,54
BurnVictim_one	1,28	0,92	4,00	3,62

Crochet	5,86	1,33	4,66	2,00
Children	6,48	1,96	5,00	2,62
NudeFemale	4,66	2,07	4,41	2,29
MutilationCadaver	1,93	1,60	4,28	3,38
MountainLake	5,17	1,95	4,79	2,11
Waterskiing	7,38	1,47	5,72	2,51
PoliceBaton	4,48	1,88	4,45	2,32
AccidentBodies	1,69	1,17	3,55	2,76
Money	7,76	1,53	6,83	2,41
KebabSkewer	6,52	1,66	5,07	2,00
Tornado_two	2,62	1,93	3,69	2,36
PoliceArrest	2,28	1,46	4,00	2,69
SurgeryOpenFinger	2,48	1,92	4,07	2,99
DirtyToilet	1,76	1,60	4,28	3,41
CakeBirthday	7,14	1,48	7,00	0,00
Rafters	4,86	1,87	4,97	1,99
DimlitRoomNeutralWoman	5,59	1,30	4,86	1,87
Father_one	7,07	1,67	5,72	2,02
Mud	3,31	1,77	3,83	2,70
Boat_one	5,38	2,38	4,69	2,30
ConcertFans	6,41	2,11	5,34	2,78
BarbedWire	3,66	1,72	4,07	2,05
FruitPeaches	6,03	1,76	4,86	2,22
ManChilling	5,55	1,45	4,69	2,42
Ferry_two	6,48	1,96	4,97	2,53
Keyring	4,83	1,42	4,31	1,73
NeutralWoman	4,28	1,56	3,86	1,85
Surfers	4,24	2,32	5,03	2,60
Building	3,21	1,84	3,76	2,40
Chicken_one	6,62	1,66	5,10	2,27
Courtyard	6,03	1,43	4,93	2,36
Alcoholic	2,59	1,48	3,93	2,55
Spoon	5,48	1,53	4,38	2,32
PoleVaulter	5,45	1,88	4,31	1,97
Motorcycle	5,59	1,50	4,83	1,51
Shipwave	2,59	1,86	4,38	2,91
BurnVictim_two	1,17	0,76	4,07	3,66
DrugAddict_one	2,00	1,31	3,83	2,67
Coyote	4,66	2,06	4,69	2,02
Attack_two	1,24	0,58	4,55	3,42
Elephants	7,03	1,82	5,59	2,57
AbstractArt_two	5,34	1,88	3,79	2,08
GirlCow	4,55	1,86	4,55	2,10
HIVtattoo_one	3,41	1,92	4,28	2,59

AimedGun_two	2,45	1,66	3,86	2,72
Spider	3,52	1,94	4,31	2,63
Mutilation_four	1,45	0,95	3,55	3,41
Sushi	6,59	1,80	5,69	2,56
Runners	6,69	1,20	5,72	2,36
Seal_two	5,86	1,68	5,14	1,79
Soldier_one	1,79	1,70	4,34	3,40
Flowers	6,14	1,75	4,59	2,13
Horses_one	2,34	1,54	3,76	2,69
Desert	6,17	2,04	4,90	2,81
Soldier_two	2,62	1,63	3,90	2,45
Mutilation_five	1,34	0,72	3,86	3,48
HarborSkyView	5,76	1,60	5,21	2,04
Boy_one	3,93	1,85	3,62	1,72
Bus	5,86	1,19	4,59	1,96
WomanGlasses	6,28	1,60	5,00	2,22
AngryFace_one	3,72	1,25	4,21	2,24
AttractiveMan	6,03	1,61	5,07	2,23
Mutilation_six	1,48	1,02	3,93	3,13
GrouperFish	5,24	1,41	4,69	1,91
MountainStorm	5,07	1,93	4,90	2,01
VenusFlyTrapFern	5,00	1,10	4,17	1,73
Attractive_one	6,45	1,78	5,72	2,19
GirlReading	6,76	1,57	5,10	2,69
OilFire	2,76	1,43	3,55	2,28
Romance_one	6,41	1,45	5,24	2,15
GunsManBed	2,62	1,54	4,21	2,50
AirplaneTaxi	5,83	1,83	4,83	1,97
Bakers	5,83	1,51	4,86	2,03
Sailing	4,76	2,21	5,07	2,60
EroticFemale_one	5,59	2,24	5,21	2,57
Father_two	7,03	1,52	5,48	2,69
CoupleKissCloseUp	6,14	1,64	4,86	2,22
Violin	6,93	1,79	5,93	2,72
Injection_two	3,31	2,07	3,72	2,37
Clothespins	5,72	1,44	4,86	2,33
Food	6,93	2,20	5,83	2,56
GasCan	4,38	2,19	3,66	1,91
Garbage_one	2,41	1,35	3,83	2,62
Ferry_one	6,24	1,88	5,14	2,42
Vomit_one	1,93	1,16	3,28	2,74
CarAccident_one	2,86	0,52	3,86	3,00
AttractiveRollerscate	5,93	2,12	4,97	2,29
FlowerProtea	6,34	1,40	5,31	2,47

KidsPlayingWater	5,24	2,56	4,83	2,56
RollerCoaster	6,41	2,06	6,10	2,01
IceCreamChoc	6,83	1,95	5,86	2,57
IceCream_two	6,00	1,49	5,10	2,30
NeutralBaby	6,21	1,57	4,93	2,34
FliesOnPie	2,31	1,44	4,14	2,89
Mutilationseven	1,79	1,80	3,97	3,38
WomanLyingChair	5,69	1,73	4,52	2,25
Tornado_three	3,72	1,81	4,79	1,21
Diver_one	5,52	1,66	4,66	2,07
Scarves	6,48	2,10	5,14	2,66
Woman_one	3,76	1,79	4,03	2,23
CarDamage_two	3,41	1,82	4,28	2,43
Orangatun	5,03	2,21	4,03	2,01
Jet	2,48	2,40	4,45	3,42
Fire_two	2,17	1,39	4,24	2,69
Assault_one	1,86	1,62	4,52	3,29
Tornado_four	3,24	1,94	3,59	2,60
Dog	3,14	2,15	3,17	2,14
Cake	6,93	1,62	6,24	2,53
Couple_Open_Shirt	6,52	1,98	5,90	2,57
Mutilation_Eight	1,34	0,77	3,38	3,33
Smarties	6,31	1,67	5,48	2,26
Veiled_Woman	4,31	1,97	4,62	2,26
Tissue	5,48	1,33	4,48	2,05
CarAccident_Two	2,00	1,39	4,14	3,04
Infant	2,07	1,62	3,90	2,72
Buttons	5,38	1,40	4,69	1,79
Weightlift	6,48	1,30	5,00	0,00
Shadow	5,00	1,58	4,14	1,79
PaintBrush	6,72	1,71	5,34	2,77
PicnicTable	5,90	1,50	5,55	2,20
Garbage_Two	2,00	1,34	3,69	2,87
Erotic_couple_two	6,07	2,56	5,07	2,78
Soldier_Three	1,83	1,67	4,59	3,27
CarRacer	4,93	2,07	4,24	2,49
Ticket	5,69	1,91	4,45	2,23
Cemetery	2,79	1,82	3,03	2,23
BoysWGuns	3,41	2,24	4,31	2,65
CarAccident_Three	2,07	1,41	3,90	2,99
Accident	2,76	2,10	3,83	3,01
Toilet	1,79	1,29	3,76	3,11
Baby_one	6,45	2,47	5,28	2,49
Hamburger	7,38	1,70	5,83	2,98

Couple_one	6,62	1,61	5,10	2,53
Garbage_three	2,62	2,09	4,00	2,95
Erotic_male	5,38	1,95	4,28	2,33
Terrorist	2,55	2,13	3,76	2,91
EroticCouple_Three	5,66	2,73	5,03	2,67
Cockpit	4,93	1,44	4,62	2,37
Boy_Two	5,34	1,32	4,24	1,98
Erotic_Couple_Four	6,21	1,54	5,21	2,35
GirlandDog	6,41	1,76	5,07	2,22
Fruit	6,31	1,67	4,97	2,38
Couple_Two	5,14	2,60	5,21	2,57
Assault_Two	1,38	0,73	4,28	3,33
Shipwreck	2,86	2,15	4,21	3,18
Attack_Three	1,21	0,62	4,72	3,53
CarAccident_Four	1,97	1,38	3,86	2,80
Attack_Four	1,38	0,86	3,76	3,27
Woman_two	6,14	1,94	4,97	2,18
Musician	6,76	1,48	5,28	2,68
Watermelon	7,66	1,23	5,52	2,65
Boy_Three	4,28	2,43	4,83	2,47
Mountain_One	5,24	1,21	4,90	2,04
Fire_Three	1,93	1,49	4,41	3,15
Attractive_Two	6,34	1,54	4,90	2,37
Clouds	5,28	1,71	4,24	2,18
DrugAddict_Two	2,14	1,36	3,55	2,82
CryingBoy	3,31	1,77	4,69	2,54
Surfer	6,03	1,97	5,41	2,61
Butterfly_Two	6,90	1,37	5,24	2,61
ElderlyMan	4,45	1,59	4,03	1,97
Skier_One	5,76	1,64	5,07	2,09
Skulls	2,41	1,72	4,03	2,85
Ruins	2,07	1,69	3,86	3,03
Fire_Four	1,97	1,61	4,10	2,79
Nature	5,41	1,68	4,48	1,96
Erotic_Couple_Five	6,41	2,41	5,83	2,54
Romance_Two	6,41	2,15	5,31	2,73
Baby_Two	7,28	1,51	5,72	2,62
Neutral_Child	6,24	2,20	5,45	2,50
Woman_Reading_Two	7,10	1,72	5,07	2,93
Refugees	2,24	1,79	4,14	3,03
Bicyclist	5,24	1,50	3,76	2,03
CarWheelInMud	3,38	1,68	3,66	2,16
Boxer	2,24	1,66	3,79	2,74
NativeBoy	1,90	1,35	3,93	3,16

Chess_Two	5,41	2,03	4,72	2,52
Seal_One	3,07	1,39	3,97	2,15
Cow	2,10	1,45	3,97	2,99
HIV_Tattoo_Two	3,14	2,03	4,14	2,59
Mountain_Two	5,03	1,66	4,79	2,19
IceCream_One	6,41	2,16	5,31	2,73
InjuredChildMan	1,62	0,98	3,69	3,15
Elderly_Woman	4,86	2,03	4,38	2,43
Gym	7,24	1,46	6,10	2,72
Tomatoes	6,10	1,80	4,59	2,28
Gun_Three	2,41	1,90	4,41	2,97
AttractiveFemale	5,59	1,96	4,93	2,52
Mug	5,52	1,48	4,86	2,26
Native_Female	3,52	2,20	4,59	2,54
Couple_Three	5,34	1,95	5,28	1,77
Traffic	5,07	0,80	4,41	1,92
Vomit_Two	2,45	1,64	3,93	2,84
Abstract_Art_Three	4,62	1,54	3,69	1,83
War	1,76	1,53	4,55	2,97
Nature_Two	7,14	1,62	6,34	2,24
Cat	1,86	1,41	3,90	3,18
Roach	3,14	1,92	4,14	2,49
Mountain_Three	5,83	1,49	4,69	2,25
AngryFace_Two	3,79	1,37	3,62	2,01
Male	5,45	1,38	4,17	2,05
DeadBody	1,38	0,82	3,52	3,08
Mutilation_Nine	1,55	1,40	3,66	3,28
Bomb	2,45	1,62	4,66	2,87
Antelope	6,55	1,38	4,90	2,50
StillLife	5,00	2,04	4,17	2,19
Woman_Three	6,24	1,77	5,38	2,21
Bride	7,55	1,24	6,28	2,55
Octopus	4,72	2,33	4,45	2,35
Parrots	6,10	1,68	4,97	2,03
Mother	7,69	1,28	5,83	2,88
House	7,72	1,83	5,97	2,87
Crying_Woman	1,79	1,05	3,34	2,36
Picnic	6,76	1,48	5,93	2,53
Mother_Two	7,10	1,95	5,76	2,85
Aimed_Gun_Four	3,21	2,40	5,14	2,96
Baby_Three	7,59	1,48	5,72	2,52
Pollution	2,34	1,70	3,83	2,74
Burn_Victim_Three	1,28	1,13	3,93	3,53
Angry_Face_Three	3,45	1,43	4,00	2,24

ToxicWaste	5,24	1,57	4,28	1,89
Cigarette	3,07	2,05	3,45	2,63
Jaguar	4,76	2,50	4,59	2,43
Attractive_Three	7,52	1,33	6,00	2,52
Store	5,69	1,34	5,21	1,95
Bomb_Two	3,55	2,15	4,00	2,33
Police_Two	2,10	1,57	4,55	3,07
Erotic_Female_Two	6,79	1,97	5,69	2,69
HomelessMan	3,62	1,63	4,03	2,18
Sunset_Two	6,59	2,10	4,72	2,79
Horses_Three	5,76	1,68	4,69	2,25
Boat_Two	6,83	1,54	5,72	2,55
Vomit_Three	2,03	1,30	3,31	2,98
Girl	2,03	0,98	3,41	2,06
Hangglider	5,52	2,11	5,41	2,26
Erotic_Female_Three	4,59	2,69	4,34	2,53
Attractive_Four	6,52	1,55	5,10	2,29
Snake_Four	2,48	1,99	3,55	2,59
Injured_Child	1,48	1,30	3,93	3,05
Skier_Two	5,07	1,94	5,14	2,15
Roaches	2,90	1,74	4,21	2,60
Boy_Four	5,83	1,97	4,69	2,29
LiftOff	4,24	2,12	5,14	1,98
KKK_Rally	3,07	2,12	4,17	2,80
Romance_Three	6,41	1,40	5,17	2,12
Sky_Surfer	5,03	2,26	4,38	2,32
Sky_Divers	5,72	2,68	5,10	2,99
Diver_Two	6,24	1,66	5,38	2,41
PitBull	2,07	1,39	4,17	3,12
Woman_Four	6,03	1,32	5,10	2,26
Baby_Four	7,55	1,45	5,86	2,66
Boy_Five	4,66	1,59	4,07	2,00
Women	5,52	1,98	4,24	2,28
Baby_Five	7,76	1,50	6,10	2,57
Train	6,38	1,84	4,90	2,38
Desserts	6,28	1,60	5,10	2,16
Puddle_Two	3,10	1,72	3,86	2,37
Attractive_Five	5,97	1,59	4,66	1,91
Baby_Six	7,55	1,35	5,97	2,63

Appendix N

Table 2

Inferential Statistics for SA Responses on IAPS

Picture	*t*-test	*p*-value	Effect size
Mushroom_one	0,32	0,75	0,07
Hospital	-0,95	0,35	-0,19
Snake_one	2	0,05	0,43
Mutilation_one	-0,03	0,98	-0,01
SportsCar	0,43	0,67	0,08
Beach	2,55	0,02	0,51
Graffiti	2,72	0,01	0,49
WomanReadingone	-5,85	0,00*	-1,2
EroticCoupleone	1,85	0,08	0,42
Bird	2,5	0,02	0,62
SmokePollution	0,18	0,86	0,04
OilFires	3,43	0	0,59
ManFeedingGiraffe	-0,44	0,66	-0,08
DentalExam	-0,92	0,37	-0,18
PancakesScones	0,06	0,95	0,01
Twins	1,12	0,27	0,22
Lion_one	1,73	0,09	0,39
Flood	-0,55	0,59	-0,12
Injection_one	-1,66	0,11	-0,35
Shark	2,52	0,02	0,43
CoupleBikes	-0,1	0,92	-0,02
SadGirls	-1,87	0,07	-0,38
Gun_two	2,69	0,01	0,49
Snake_two	4,16	0	0,81
WomenDrinks	1,81	0,08	0,42
ManInPool	5,01	0,00*	0,85
BeachCouple	3,35	0	0,68
Fire_one	2,56	0,02	0,48
AbstractArt_one	2,46	0,02	0,52
EroticCoupleInBed	2,57	0,02	0,56
VideoTape	-1,74	0,09	-0,39
CoupleOld	0,24	0,81	0,05
Cow	-0,02	0,99	0
Police_one	0,65	0,52	0,13
GrievingFemale	1,91	0,07	0,33
EroticNudeMale	5,65	0,00*	1,28

Shopping	-2,68	0,01	-0,6
FatherBaby	-1,3	0,21	-0,26
CandyBarOne	0,63	0,54	0,13
BikerOnFire	4,52	0,00*	0,82
WingWalkPlane	4,15	0	0,89
Mushroom_two	3,55	0	0,64
Snakes_three	1,76	0,09	0,34
CarBootClampedW	-3,62	0	-0,73
Butterfly_one	3,96	0	0,82
Gang	1,33	0,19	0,23
Book	-5,11	0,00*	-1,05
ManOnFire	2,57	0,02	0,4
Mutilation_two	0,39	0,7	0,07
CarDamage_one	2,81	0,01	0,61
Sunset_one	4,18	0	0,82
AimedGun_one	-0,01	0,99	0
Bucket	-1,71	0,1	-0,36
Chess_one	-2,69	0,01	-0,58
ManFisherman	0,61	0,55	0,12
TrashCan	-2,07	0,05	-0,44
Family	-0,23	0,82	-0,04
HospitalHallway	0,34	0,74	0,07
Kids	-0,38	0,71	-0,07
EroticCoupleFacing	1,12	0,27	0,23
SeaMuizenberg	5,89	0,00*	1,17
Attack_one	0,79	0,43	0,13
Shoes	2,51	0,02	0,5
Rower	3,06	0	0,62
Brownie	3,57	0	0,67
BatteredFemale1	0,36	0,72	0,07
FamilyDinner	-3,21	0	-0,57
ManComputer	-0,02	0,98	0
Lion_two	4,25	0	0,96
BatteredFemale2	1,35	0,19	0,23
Mutilation_three	1,33	0,19	0,22
Chicken_two	0,12	0,91	0,02
Tornado_one	1,05	0,3	0,19
Injury	2,82	0,01	0,48
Gun_one	-0,05	0,96	-0,01
BabyIncubator	1,49	0,15	0,29
AssaultTorture	1,96	0,06	0,34
BurntBuilding	3,61	0	0,75
BloodyKiss	0,52	0,6	0,11
BurnVictim_one	3	0,01	0,46

Crochet	-1,67	0,11	-0,3
Children	-0,78	0,44	-0,16
NudeFemale	2,37	0,02	0,46
MutilationCadaver	-0,37	0,71	-0,08
MountainLake	5,97	0,00*	1,17
Waterskiing	-2,77	0,01	-0,52
PoliceBaton	-2,27	0,03	-0,45
AccidentBodies	2,68	0,01	0,44
Money	0,53	0,6	0,09
KebabSkewer	-0,38	0,71	-0,07
Tornado_two	3,42	0	0,58
PoliceArrest	4,7	0,00*	0,8
SurgeryOpenFinger	1,34	0,19	0,25
DirtyToilet	1,69	0,1	0,3
CakeBirthday	-1,88	0,07	-0,34
Rafters	6,43	0,00*	1,32
DimlitRoomNeutralWoman	-2,06	0,05	-0,38
Father_one	1,65	0,11	0,3
Mud	-0,91	0,37	-0,18
Boat_one	4,86	0,00*	1,17
ConcertFans	0,14	0,89	0,03
BarbedWire	0,89	0,38	0,17
FruitPeaches	-1,63	0,11	-0,3
ManChilling	-2,23	0,03	-0,43
Ferry_two	2,55	0,02	0,51
Keyring	0,39	0,7	0,09
NeutralWoman	0,5	0,62	0,11
Surfers	5,07	0,00*	1,07
Building	2,32	0,03	0,47
Chicken_one	-1,4	0,17	-0,24
Courtyard	4,89	0,00*	0,91
Alcoholic	2,13	0,04	0,36
Spoon	-1,56	0,13	-0,42
PoleVaulter	3,24	0	0,7
Motorcycle	2,17	0,04	0,39
Shipwave	1,54	0,13	0,31
BurnVictim_two	0,98	0,34	0,16
DrugAddict_one	2,39	0,02	0,44
Coyote	3,94	0	0,76
Attack_two	6,9	0,00*	0,75
Elephants	-0,6	0,55	-0,13
AbstractArt_two	-2,05	0,05	-0,41
GirlCow	0,98	0,34	0,19
HIVtattoo_one	0,78	0,44	0,13

AimedGun_two	2,44	0,02	0,46
Spider	-0,46	0,65	-0,09
Mutilation_four	3,13	0	0,52
Sushi	-1,39	0,17	-0,24
Runners	-0,85	0,4	-0,13
Seal_two	7,44	0,00*	1,45
Soldier_one	1,64	0,11	0,31
Flowers	2,9	0,01	0,54
Horses_one	4,1	0	0,66
Desert	3,54	0	0,74
Soldier_two	2,01	0,05	0,37
Mutilation_five	3,92	0	0,52
HarborSkyView	3,62	0	0,65
Boy_one	1,1	0,28	0,22
Bus	-1,64	0,11	-0,28
WomanGlasses	-2,68	0,01	-0,49
AngryFace_one	0,54	0,59	0,08
AttractiveMan	-1,82	0,08	-0,35
Mutilation_six	5,1	0,00*	0,82
GrouperFish	5,63	0,00*	0,92
MountainStorm	5,82	0,00*	1,2
VenusFlyTrapFern	1,91	0,07	0,35
Attractive_one	-0,57	0,57	-0,11
GirlReading	-2,01	0,05	-0,38
OilFire	4,26	0	0,75
Romance_one	-0,01	0,99	0
GunsManBed	0,69	0,49	0,12
AirplaneTaxi	-1,78	0,09	-0,34
Bakers	-1,06	0,3	-0,21
Sailing	7,23	0,00*	1,67
EroticFemale_one	1,21	0,24	0,25
Father_two	-1,11	0,28	-0,22
CoupleKissCloseUp	1,94	0,06	0,37
Violin	-1,3	0,21	-0,25
Injection_two	0,88	0,38	0,18
Clothespins	-1,48	0,15	-0,29
Food	-1,49	0,15	-0,29
GasCan	0,35	0,73	0,08
Garbage_one	-0,02	0,99	0
Ferry_one	0,85	0,4	0,17
Vomit_one	1,29	0,21	0,23
CarAccident_one	-5,45	0,00*	-0,52
AttractiveRollerscate	1,52	0,14	0,3
FlowerProtea	-0,1	0,92	-0,02

KidsPlayingWater	3,81	0	0,88
RollerCoaster	2,08	0,05	0,37
IceCreamChoc	-0,41	0,69	-0,08
IceCream_two	1,16	0,26	0,2
NeutralBaby	1,49	0,15	0,23
FliesOnPie	4,78	0,00*	0,75
Mutilationseven	1,52	0,14	0,28
WomanLyingChair	2,27	0,03	0,49
Tornado_three	1,24	0,23	0,23
Diver_one	3,67	0	0,68
Scarves	-2,37	0,02	-0,53
Woman_one	1,33	0,19	0,29
CarDamage_two	-0,72	0,48	-0,14
Orangatun	2,69	0,01	0,59
Jet	1,39	0,18	0,29
Fire_two	2,35	0,03	0,45
Assault_one	2,69	0,01	0,53
Tornado_four	0,77	0,45	0,15
Dog	1,41	0,17	0,3
Cake	-0,7	0,49	-0,14
Couple_Open_Shirt	0,53	0,6	0,11
Mutilation_Eight	2,49	0,02	0,33
Smarties	1,93	0,06	0,37
Veiled_Woman	3,42	0	0,72
Tissue	-2,2	0,04	-0,43
CarAccident_Two	1,78	0,09	0,33
Infant	-0,63	0,54	-0,11
Buttons	-0,23	0,82	-0,05
Weightlift	-0,88	0,39	-0,14
Shadow	0,61	0,54	0,12
PaintBrush	-2,19	0,04	-0,45
PicnicTable	-1,86	0,07	-0,37
Garbage_Two	3,75	0	0,74
Erotic_couple_two	1,16	0,26	0,25
Soldier_Three	1,17	0,25	0,23
CarRacer	3,41	0	0,68
Ticket	-7,13	0,00*	-1,49
Cemetery	0,91	0,37	0,16
BoysWGuns	-0,75	0,46	-0,15
CarAccident_Three	0,88	0,39	0,17
Accident	0,34	0,74	0,07
Toilet	1,95	0,06	0,33
Baby_one	0,09	0,93	0,02
Hamburger	-2,22	0,03	-0,37

Couple_one	0,97	0,34	0,16
Garbage_three	-0,59	0,56	-0,14
Erotic_male	1,19	0,25	0,22
Terrorist	0,91	0,37	0,2
EroticCouple_Three	1,31	0,2	0,27
Cockpit	3,22	0	0,61
Boy_Two	-4,6	0,00*	-0,79
Erotic_Couple_Four	2,42	0,02	0,45
GirlandDog	1	0,33	0,21
Fruit	-0,32	0,75	-0,06
Couple_Two	2,47	0,02	0,44
Assault_Two	4,82	0,00*	0,63
Shipwreck	-0,41	0,69	-0,09
Attack_Three	8,28	0,00*	0,94
CarAccident_Four	2,29	0,03	0,42
Attack_Four	6,75	0,00*	0,88
Woman_two	-0,27	0,79	-0,06
Musician	-5,67	0,00*	-0,95
Watermelon	-2,6	0,01	-0,41
Boy_Three	-0,79	0,44	-0,17
Mountain_One	8,99	0,00*	1,45
Fire_Three	2,89	0,01	0,51
Attractive_Two	-0,68	0,5	-0,11
Clouds	4,74	0,00*	0,87
DrugAddict_Two	1,52	0,14	0,25
CryingBoy	-0,33	0,74	-0,07
Surfer	2,06	0,05	0,44
Butterfly_Two	0,84	0,41	0,15
ElderlyMan	-1,08	0,29	-0,18
Skier_One	3,19	0	0,6
Skulls	3,43	0	0,58
Ruins	3,13	0	0,61
Fire_Four	4,59	0,00*	0,82
Nature	5,12	0,00*	1
Erotic_Couple_Five	0,19	0,85	0,04
Romance_Two	1,77	0,09	0,39
Baby_Two	0,16	0,88	0,03
Neutral_Child	0,71	0,49	0,16
Woman_Reading_2	-2,55	0,02	-0,54
Refugees	5,33	0,00*	1,05
Bicyclist	2,82	0,01	0,54
CarWheelInMud	3,63	0	0,73
Boxer	2,3	0,03	0,4
NativeBoy	2,22	0,04	0,31

Chess_Two	-1,34	0,19	-0,28
Seal_One	-0,31	0,76	-0,05
Cow	0,32	0,75	0,06
HIV_Tattoo_Two	-2,12	0,04	-0,44
Mountain_Two	4,79	0,00*	0,82
IceCream_One	2,78	0,01	0,57
InjuredChildMan	0,99	0,33	0,17
Elderly_Woman	-4,25	0	-0,81
Gym	-4,52	0,00*	-0,72
Tomatoes	-1,3	0,21	-0,25
Gun_Three	-0,24	0,81	-0,05
AttractiveFemale	-0,46	0,65	-0,09
Mug	-2,14	0,04	-0,47
Native_Female	0,57	0,57	0,12
Couple_Three	0,68	0,5	0,14
Traffic	-3,5	0	-0,46
Vomit_Two	-0,68	0,5	-0,14
Abstract_Art_Three	2,16	0,04	0,48
War	3,04	0,01	0,52
Nature_Two	3,03	0,01	0,64
Cat	0,37	0,71	0,07
Roach	1,52	0,14	0,29
Mountain_Three	4,42	0,00*	0,8
AngryFace_Two	-0,33	0,75	-0,05
Male	3,52	0	0,55
DeadBody	2,96	0,01	0,45
Mutilation_Nine	1,37	0,18	0,24
Bomb	1,4	0,17	0,26
Antelope	3,2	0	0,56
StillLife	-0,5	0,62	-0,11
Woman_Three	-1,41	0,17	-0,3
Bride	0,38	0,7	0,07
Octopus	2,6	0,01	0,55
Parrots	0,02	0,98	0
Mother	-0,63	0,54	-0,11
House	-2,98	0,01	-0,64
Crying_Woman	2,35	0,03	0,38
Picnic	-1,52	0,14	-0,28
Mother_Two	-0,48	0,64	-0,1
Aimed_Gun_Four	-0,26	0,79	-0,06
Baby_Three	2,13	0,04	0,4
Pollution	1,6	0,12	0,33
Burn_Victim_Three	1,54	0,13	0,29
Angry_Face_Three	-0,41	0,69	-0,06

ToxicWaste	-5,21	0,00*	-0,99
Cigarette	-0,31	0,76	-0,06
Jaguar	4,07	0	0,8
Attractive_Three	-4,54	0,00*	-0,72
Store	0,85	0,4	0,14
Bomb_Two	-1,48	0,15	-0,31
Police_Two	1,19	0,24	0,23
Erotic_Female_Two	-0,53	0,6	-0,11
HomelessMan	-2,47	0,02	-0,52
Sunset_Two	2,73	0,01	0,61
Horses_Three	4,55	0,00*	0,86
Boat_Two	2,29	0,03	0,46
Vomit_Three	-0,6	0,55	-0,11
Girl	3,49	0	0,48
Hangglider	3,04	0,01	0,64
Erotic_Female_3	2,85	0,01	0,59
Attractive_Four	-1,03	0,31	-0,16
Snake_Four	3,75	0	0,71
Injured_Child	1,32	0,2	0,25
Skier_Two	4,77	0,00*	1,02
Roaches	0,85	0,4	0,17
Boy_Four	-3,31	0	-0,66
LiftOff	7,05	0,00*	1,49
KKK_Rally	-2,49	0,02	-0,5
Romance_Three	0,18	0,86	0,03
Sky_Surfer	4,71	0,00*	1,03
Sky_Divers	3,7	0	0,88
Diver_Two	0,45	0,66	0,09
PitBull	5,75	0,00*	0,94
Woman_Four	-0,95	0,35	-0,18
Baby_Four	1,33	0,2	0,26
Boy_Five	1,2	0,24	0,2
Women	-3,97	0	-0,75
Baby_Five	0,36	0,72	0,07
Train	-1,31	0,2	-0,26
Desserts	0,89	0,38	0,16
Puddle_Two	2,06	0,05	0,42
Attractive_Five	1,84	0,08	0,31
Baby_Six	1,27	0,22	0,25

Note. * $p < .00015$

Appendix O

Table 3

Inspection of Valence Discrepancies

Name	Norm	Valence Score Norm	SA on IAPS	Valence Score IAPS	Image Number	Repeat/ Non-Repeat	SA on SA APS	Valence Score SA-APS
Graffiti	Neutral	4,67	Negative	3,83	9468	N	Neutral	4,59
Woman Reading	Neutral	5,19	Positive	6,93	2377	N	Positive	6,1
Dental Exam	Negative	3,72	Neutral	4,07	3280	N	Neutral	4,24
Flood	Negative	3,85	Neutral	4,07	9926	R		
Injection	Negative	3,76	Neutral	4,45	9594	N	Negative	3,9
Gun Two	Neutral	4,01	Negative	3,03	6800	R		
Abstract Art	Neutral	4,63	Negative	3,83	7185	R		
Erotic Couple	Positive	6,96	Neutral	5,90	4650	N	Positive	6,76
Erotic Nude Male	Positive	7,04	Neutral	4,34	4520	N	Neutral	4,31
Shopping	Neutral	5,31	Positive	6,14	2745,1	N	Positive	6,66
Wing Walker	Positive	6,25	Neutral	4,28	8341	N	Positive	6,97
Wheel Clamp	Negative	3,47	Neutral	4,83	7136	R		
Butterfly	Positive	6,59	Neutral	5,14	1605	R		
Book	Neutral	5,19	Positive	6,90	7090	R		
Car Damage	Neutral	4,3	Negative	3,24	7137	R		
Bucket	Negative	3,79	Neutral	4,38	7078	R		
Chess	Neutral	5,38	Positive	6,24	7512	N	Positive	6,31
Man Fishing	Positive	6,15	Neutral	5,97	2392	N	Positive	6,28
Rower	Positive	6,24	Neutral	5,21	8050	N	Positive	6,21
Lion Two	Positive	6,79	Neutral	4,86	1720	N	Neutral	4,90
Mountain Lake	Positive	7,33	Neutral	5,17	5820	N	Positive	6,55
Police Batton	Negative	3,69	Neutral	4,48	2682	N	Neutral	6,66
Rafters	Positive	7,09	Neutral	4,86	8400	N	Neutral	5,52
Boat One	Positive	7,53	Neutral	5,38	8210	N	Positive	6,03
Peaches	Neutral	5,5	Positive	6,03	7283	N	Positive	6,83
Surfers	Positive	6,43	Neutral	4,24	8130	N	Neutral	4,90
Building	Neutral	4	Negative	3,21	9469	N	Negative	3,00
Pole Voulter	Positive	6,58	Neutral	5,45	8250	N	Positive	6,45
Motor Cycle	Positive	6,19	Neutral	5,59	1640	N	Neutral	5,86
Coyote	Positive	6,16	Neutral	4,66	1640	N	Negative	3,83
Seal Two	Positive	8,19	Neutral	5,86	1440	N	Neutral	5,55
Harbour Sky	Positive	6,83	Neutral	5,76	5215	N	Positive	7,00
Boy One	Neutral	4,31	Negative	3,93	2810	N	Neutral	5,72
Woman Glasses	Neutral	5,48	Positive	6,28	2372	N	Positive	6,24
Attractive Man	Neutral	5,49	Positive	6,03	4571	N	Positive	6,03
Grouper Fish	Positive	6,71	Neutral	5,24	1910	N	Neutral	5,83
Mountain Storm	Positive	7,15	Neutral	5,07	5814	N	Neutral	5,69
Sailing	Positive	7,73	Neutral	4,76	8080	N	Neutral	5,76

Erotic Female One	Positive	6,09	Neutral	5,59	4225	N	Neutral	5,83
Attract								
Rolleskater	Positive	6,53	Neutral	5,93	4150	N	Positive	6,07
Kids Playing	Positive	7,05	Neutral	5,24	2346	N	Positive	6,41
Woman Lying	Positive	6,42	Neutral	5,69	2037	N	Positive	6,48
Tornado Three	Neutral	4,14	Negative	3,72	5970	N	Neutral	5,76
Diver One	Positive	6,65	Neutral	5,52	8041	N	Positive	6,28
Scarves	Neutral	5,56	Positive	6,48	7205	N	Positive	6,03
Woman One	Neutral	4,2	Negative	3,76	2271	N	Neutral	4,93
Orangatang	Positive	6,14	Neutral	5,03	1661	N	Neutral	5,10
Car Racer	Positive	6,24	Neutral	4,93	8320	N	Neutral	4,48
Ticket	Negative	3,16	Neutral	5,69	9417	N	Negative	3,62
Erotic Couple 3	Positive	6,32	Neutral	5,66	4651	N	Neutral	5,93
Couple Two	Positive	6,33	Neutral	5,14	4598	N	Positive	8,03
Musician	Neutral	5,2	Positive	6,76	2487	N	Positive	7,21
Boy Three	Negative	3,92	Neutral	4,28	2795	N	Negative	2,14
Mountain One	Positive	7,27	Neutral	5,24	5660	N	Positive	6,34
Clouds	Positive	6,78	Neutral	5,28	5870	R		
Skier One	Positive	6,73	Neutral	5,76	8193	N	Neutral	5,10
Nature	Positive	7,01	Neutral	5,41	5220	N	Positive	6,79
Refugees	Neutral	4,01	Negative	2,24	2695	N	Negative	3,21
Bicyclist	Positive	6,03	Neutral	5,24	5875	N	Neutral	5,93
Car Wheel In Mud	Neutral	4,51	Negative	3,38	7920	R		
Mountain Two	Positive	6,51	Neutral	5,03	5628	N	Positive	6,86
Elderly woman	Negative	3,26	Neutral	4,86	2590	N	Negative	2,83
Tomatoes	Neutral	5,67	Positive	6,10	7285	R		
Mountain Three	Positive	7,05	Neutral	5,83	5611	N	Neutral	5,93
Male	Positive	6,35	Neutral	5,45	2630	N	Neutral	5,97
Woman Three	Neutral	5,78	Positive	6,24	2025	N	Positive	6,38
Toxic Waste	Negative	3,72	Neutral	5,24	9270	N	Negative	2,28
Jaguar	Positive	6,65	Neutral	4,76	1650	N	Neutral	4,66
Horses Three	Positive	7,18	Neutral	5,76	1590	N	Positive	6,34
Hang Glider	Positive	6,71	Neutral	5,52	8161	N	Neutral	5,90
Erotic Female 3	Positive	6,01	Neutral	4,59	4320	N	Neutral	5,00
Skier Two	Positive	6,79	Neutral	5,07	8021	N	Positive	6,55
Lift Off	Positive	7,01	Neutral	4,24	5450	N	Positive	7,21
Sky Surfer	Positive	7,01	Neutral	5,03	8186	N	Positive	7,14
Sky Diver	Positive	7,57	Neutral	5,72	8185	N	Positive	6,03
Woman Four	Neutral	5,8	Positive	6,03	2513	N	Positive	6,38
Train	Neutral	5,93	Positive	6,38	7039	R		
Attractive Five	Positive	6,51	Neutral	5,97	4525	N	Positive	6,24

Note: Blue text are SA-APS images that rectified the valence discrepancy

Appendix P

Table 4

Descriptive Statistics for SA-APS

Picture	Mean Valence	Std Dev Valence	Mean Arousal	Std Dev Arousal
Mushroom_one	4,72	1,96	4,17	1,89
Hospital	3,07	1,91	4,03	2,53
Snake_one	2,90	2,45	4,55	3,08
Mutilation_one	1,59	1,18	3,59	3,21
SportsCar	7,72	1,41	6,83	2,30
Beach	7,90	1,23	5,83	2,82
Graffiti	4,59	2,15	4,31	2,58
WomanReadingone	6,10	1,63	5,10	2,34
EroticCoupleone	6,21	2,06	5,59	2,34
Bird	4,17	2,24	4,21	2,23
SmokePollution	4,28	1,53	4,52	1,96
OilFires	3,48	2,06	4,79	2,74
ManFeedingGiraffe	6,41	1,76	5,38	2,18
DentalExam	4,24	1,99	4,21	1,97
PancakesScones	6,21	1,93	4,34	2,59
Twins	5,69	2,05	4,52	2,31
Lion_one	6,69	1,63	5,79	2,35
Flood	4,07	2,14	4,24	2,18
Injection_one	3,90	1,95	4,55	2,40
Shark	3,03	1,61	4,14	2,64
CoupleBikes	6,90	1,82	5,83	2,63
SadGirls	3,21	1,82	4,34	2,41
Gun_two	3,03	1,95	3,59	2,58
Snake_two	2,31	1,93	3,72	3,07
WomenDrinks	5,52	1,79	4,72	2,12
ManInPool	1,76	1,27	3,59	3,13
BeachCouple	7,55	1,68	5,14	2,77
Fire_one	2,31	1,54	4,17	2,77
AbstractArt_one	3,83	1,75	3,59	2,03
EroticCoupleInBed	6,76	2,05	5,59	2,77
VideoTape	5,31	1,39	4,55	2,38
CoupleOld	7,83	1,49	6,52	2,59
Cow	2,14	1,92	4,48	3,27
Police_one	2,55	1,84	4,34	2,77
GrievingFemale	1,93	1,25	4,10	3,18
EroticNudeMale	4,31	2,16	3,52	2,43
Shopping	6,66	1,74	5,03	2,78

FatherBaby	8,00	1,69	5,93	3,17
CandyBarOne	7,14	1,60	6,03	2,40
BikerOnFire	1,17	0,66	4,14	3,69
WingWalkPlaneCarniv	6,97	2,28	5,90	2,81
Mushroom_two	4,24	1,38	4,00	1,63
Snakes_three	2,55	1,84	3,45	2,57
CarBootClampedW	4,83	2,02	4,48	2,26
Butterfly_one	5,14	1,98	4,07	1,93
Gang	1,86	1,25	3,45	3,03
Book	6,90	1,80	5,41	2,88
ManOnFire	1,45	0,95	4,24	3,55
Mutilation_two	1,48	1,06	4,07	3,25
CarDamage_one	3,24	2,03	3,72	2,62
Sunset_one	5,59	1,97	4,24	2,13
AimedGun_one	2,48	1,86	3,83	3,01
Bucket	4,38	1,86	4,72	2,23
Chess_one	6,31	1,61	4,86	2,07
ManFisherman	6,28	2,03	5,14	2,29
TrashCan	5,03	1,57	4,28	2,09
Family	8,00	1,25	6,00	2,70
HospitalHallway	2,76	1,62	4,07	2,19
Kids	6,14	2,13	5,62	2,58
EroticCoupleFacing	6,31	2,58	5,34	2,84
SeaMuizenbergHomes	7,07	1,39	5,34	2,69
Attack_one	2,03	1,38	4,28	2,90
Shoes	4,17	1,39	4,07	2,00
Rower	6,21	1,82	5,24	2,67
Brownie	6,45	1,78	5,38	2,26
BatteredFemale1	1,83	1,34	3,79	3,35
FamilyDinner	8,31	1,04	6,66	2,96
ManComputer	6,38	1,21	4,83	2,09
Lion_two	4,90	2,23	4,90	2,27
BatteredFemale2	2,31	1,65	3,83	2,93
Mutilation_three	1,31	0,81	3,93	3,41
Chicken_two	6,59	1,52	5,24	2,63
Tornado_one	3,14	1,98	3,76	2,46
Injury	1,45	1,02	3,79	3,44
Gun_one	3,41	2,10	3,62	2,29
BabyIncubator	1,69	1,23	3,83	3,36
AssaultTorture	2,14	2,10	4,48	3,17
BurntBuilding	3,76	1,64	3,45	2,15
BloodyKiss	1,90	1,99	4,52	3,54
BurnVictim_one	1,28	0,92	4,00	3,62
Crochet	6,48	1,57	4,72	2,58

Children	6,24	1,68	5,00	2,14
NudeFemale	4,66	2,07	4,41	2,29
MutilationCadaver	1,93	1,60	4,28	3,38
MountainLake	6,55	1,30	5,10	2,37
Waterskiing	6,66	2,39	5,41	2,83
PoliceBaton	4,45	1,97	4,31	2,11
AccidentBodies	1,66	1,11	3,79	2,99
Money	8,21	1,24	6,76	2,73
KebabSkewer	6,90	1,78	5,93	2,63
Tornado_two	3,38	2,37	4,28	2,94
PoliceArrest	3,79	2,43	4,41	2,71
SurgeryOpenFinger	2,48	1,92	4,07	2,99
DirtyToilet	1,76	1,60	4,28	3,41
CakeBirthday	7,17	1,65	6,45	2,40
Rafters	5,52	1,94	4,79	2,34
DimlitRoomNeutral	3,69	1,98	3,93	2,28
Father_one	7,14	2,05	5,55	2,89
Mud	3,00	1,58	4,00	2,67
Boat_one	6,03	2,46	5,45	2,54
ConcertFans	7,83	1,54	6,69	2,74
BarbedWire	4,52	2,15	4,90	2,34
FruitPeaches	6,83	1,63	5,48	2,68
ManChilling	5,97	1,55	5,55	2,05
Ferry_two	6,93	1,39	5,45	2,37
Keyring	4,83	1,42	4,31	1,73
NeutralWoman	5,48	1,60	4,72	2,03
Surfers	4,90	2,01	5,07	2,34
Building	3,00	1,93	3,62	2,62
Chicken_one	7,10	1,47	5,97	2,51
Courtyard	7,07	1,67	5,59	2,75
Alcoholic	3,45	1,88	4,17	2,88
Spoon	5,48	1,53	4,38	2,32
PoleVaulter	6,45	1,55	5,38	2,44
Motorcycle	5,86	2,25	5,28	2,34
Shipwave	2,79	1,80	3,90	2,83
BurnVictim_two	1,17	0,76	4,07	3,66
DrugAddict_one	3,31	1,75	4,31	2,38
Coyote	3,83	2,14	4,00	2,43
Attack_two	1,55	1,12	4,62	3,64
Elephants	6,14	2,29	4,90	2,57
AbstractArt_two	5,34	1,88	3,79	2,08
GirlCow	5,10	1,70	4,03	1,76
HIVtattoo_one	3,41	1,92	4,28	2,59
AimedGun_two	2,48	1,62	4,17	2,84

Spider	3,31	2,49	4,55	2,80
Mutilation_four	1,45	0,95	3,55	3,41
Sushi	7,45	1,38	5,97	2,46
Runners	6,17	1,51	5,03	2,24
Seal_two	5,55	2,15	4,97	2,31
Soldier_one	1,79	1,70	4,34	3,40
Flowers	5,93	1,65	4,69	2,16
Horses_one	2,34	1,54	3,76	2,69
Desert	6,07	1,75	4,83	2,45
Soldier_two	2,48	1,24	3,72	2,33
Mutilation_five	1,34	0,72	3,86	3,48
HarborSkyView	7,00	1,49	5,97	2,41
Boy_one	5,72	2,05	5,21	2,44
Bus	6,00	1,31	4,69	2,33
WomanGlasses	6,24	1,70	4,86	2,39
AngryFace_one	5,07	1,16	4,31	1,85
AttractiveMan	6,03	1,57	5,28	2,05
Mutilation_six	1,48	1,02	3,93	3,13
GrouperFish	5,83	1,73	4,93	2,28
MountainStorm	5,69	1,34	4,97	2,04
VenusFlyTrapFern	5,83	1,65	5,38	1,97
Attractive_one	5,45	2,87	4,34	2,82
GirlReading	6,72	1,56	4,83	2,55
OilFire	2,76	1,43	3,55	2,28
Romance_one	5,17	2,41	4,55	2,59
GunsManBed	2,55	1,43	4,03	2,67
AirplaneTaxi	4,93	1,94	4,76	2,20
Bakers	6,00	1,93	4,97	2,28
Sailing	5,76	2,23	4,90	2,43
EroticFemale_one	5,83	2,65	5,45	2,87
Father_two	7,28	1,87	5,66	2,84
CoupleKissCloseUp	6,62	1,40	5,10	2,57
Violin	6,17	2,28	4,90	2,70
Injection_two	3,90	1,63	4,76	1,81
Clothespins	5,72	1,44	4,86	2,33
Food	6,90	1,59	5,76	2,20
GasCan	4,38	2,19	3,66	1,91
Garbage_one	3,03	1,64	4,07	2,20
Ferry_one	5,62	1,57	4,86	2,33
Vomit_one	1,93	1,16	3,28	2,74
CarAccident_one	1,97	1,15	3,86	3,00
AttractiveRollerscate	6,07	1,77	5,03	2,24
FlowerProtea	5,38	1,82	4,28	2,05
KidsPlayingWater	6,41	2,21	5,17	2,56

RollerCoaster	5,79	2,76	5,17	2,49
IceCreamChoc	6,83	1,95	5,86	2,57
IceCream_two	6,76	1,53	5,79	2,48
NeutralBaby	4,93	1,81	4,31	2,02
FliesOnPie	3,10	1,54	3,34	1,76
Mutilationseven	1,79	1,80	3,97	3,38
WomanLyingChair	6,48	1,86	5,31	2,48
Tornado_three	5,76	1,99	4,76	2,06
Diver_one	6,28	1,56	4,90	2,29
Scarves	6,03	1,64	5,31	2,29
Woman_one	4,93	1,62	4,76	1,92
CarDamage_two	3,41	1,82	4,28	2,43
Orangatun	5,10	1,35	4,55	1,86
Jet	2,03	1,45	4,10	3,10
Fire_two	2,48	1,48	4,17	2,58
Assault_one	1,76	1,27	3,79	3,02
Tornado_four	3,86	2,33	4,69	2,87
Dog	3,14	2,15	3,17	2,14
Cake	6,14	2,12	5,03	2,73
Couple_Open_Shirt	7,38	1,78	5,69	2,80
Mutilation_Eight	1,34	0,77	3,38	3,33
Smarties	7,31	1,49	6,17	2,44
Veiled_Woman	4,72	2,00	4,59	2,08
Tissue	5,48	1,33	4,48	2,05
CarAccident_Two	1,93	1,46	4,21	3,54
Infant	2,07	1,62	3,90	2,72
Buttons	5,38	1,40	4,69	1,79
Weightlift	6,41	1,24	5,41	1,74
Shadow	5,00	1,58	4,14	1,79
PaintBrush	5,83	1,95	4,90	2,32
PicnicTable	5,93	1,46	4,66	2,30
Garbage_Two	3,17	1,65	3,41	1,94
Erotic_couple_two	6,45	2,23	4,31	2,82
Soldier_Three	1,83	1,67	4,59	3,27
CarRacer	4,48	2,38	4,41	2,29
Ticket	3,62	1,99	4,31	2,35
Cemetery	3,03	1,78	3,07	2,20
BoysWGuns	1,97	1,59	4,28	3,26
CarAccident_Three	2,07	1,41	3,90	2,99
Accident	2,07	1,44	4,41	3,34
Toilet	1,07	0,37	3,76	3,11
Baby_one	7,59	1,57	5,69	2,90
Hamburger	6,97	1,59	5,86	2,64
Couple_one	7,34	1,56	5,28	2,68

Garbage_three	2,31	1,51	3,55	2,59
Erotic_male	5,17	1,69	4,48	1,94
Terrorist	2,07	1,67	4,10	3,15
EroticCouple_Three	5,93	2,15	5,21	2,38
Cockpit	5,79	1,92	4,83	2,55
Boy_Two	4,41	1,82	3,38	1,72
Erotic_Couple_Four	6,24	2,08	4,86	2,50
GirlandDog	7,17	1,58	5,90	2,34
Fruit	6,31	1,67	4,97	2,38
Couple_Two	8,03	1,38	6,97	2,38
Assault_Two	1,83	1,51	4,21	3,35
Shipwreck	2,86	2,15	4,21	3,18
Attack_Three	1,59	1,52	4,59	3,50
CarAccident_Four	2,55	1,76	4,41	2,97
Attack_Four	2,45	1,84	4,38	3,06
Woman_two	7,72	1,31	5,90	2,70
Musician	7,21	1,59	5,86	2,84
Watermelon	7,34	1,61	5,45	2,73
Boy_Three	2,14	1,48	4,10	2,62
Mountain_One	6,34	1,63	5,52	2,54
Fire_Three	2,45	1,82	4,62	2,86
Attractive_Two	6,69	2,07	5,24	2,76
Clouds	5,28	1,71	4,24	2,18
DrugAddict_Two	2,41	1,52	4,66	3,04
CryingBoy	4,00	1,75	4,07	2,14
Surfer	6,03	1,97	5,41	2,61
Butterfly_Two	6,90	1,37	5,24	2,61
ElderlyMan	4,90	1,80	4,69	1,71
Skier_One	5,10	2,08	5,03	2,38
Skulls	2,41	1,72	4,03	2,85
Ruins	3,31	2,30	3,34	2,44
Fire_Four	3,17	1,87	3,41	1,99
Nature	6,79	1,45	5,38	2,43
Erotic_Couple_Five	5,93	2,15	5,28	2,60
Romance_Two	7,48	1,40	5,66	2,74
Baby_Two	7,66	1,52	6,03	2,44
CarTheft	2,03	1,40	4,14	3,31
Neutral_Child	7,24	1,90	5,45	2,78
Woman_Reading_Two	7,10	1,72	5,07	2,93
Refugees	3,21	1,54	3,76	1,96
Bicyclist	5,93	1,77	5,28	2,12
CarWheelInMud	3,38	1,68	3,66	2,16
Boxer	2,24	1,66	3,79	2,74
NativeBoy	1,90	1,35	3,93	3,16

Chess_Two	6,69	1,61	5,21	2,51
Seal_One	2,69	1,65	3,62	2,34
Cow	2,10	1,45	3,97	2,99
HIV_Tattoo_Two	2,79	1,70	3,90	2,53
Mountain_Two	6,86	1,98	5,72	2,59
IceCream_One	6,28	2,17	4,83	2,32
InjuredChildMan	1,62	0,98	3,69	3,15
Elderly_Woman	2,83	1,98	3,86	2,57
Gym	7,03	1,99	5,28	2,84
Tomatoes	6,10	1,80	4,59	2,28
Gun_Three	2,41	1,90	4,41	2,97
AttractiveFemale	6,41	1,32	5,31	2,04
Mug	5,52	1,48	4,86	2,26
Native_Female	3,14	2,13	3,97	2,63
Couple_Three	6,48	1,33	6,00	2,30
Traffic	4,62	1,15	4,41	2,15
Vomit_Two	2,45	1,64	3,93	2,84
Abstract_Art_Three	4,62	1,54	3,69	1,83
War	4,31	2,05	4,14	2,12
Nature_Two	6,72	1,41	5,28	2,55
Cat	1,86	1,41	3,90	3,18
Roach	3,14	1,92	4,14	2,49
Mountain_Three	5,93	1,77	4,93	2,30
AngryFace_Two	5,34	1,61	4,76	2,32
Male	5,97	1,48	4,55	2,47
DeadBody	1,38	0,82	3,52	3,08
Mutilation_Nine	1,55	1,40	3,66	3,28
Bomb	2,10	1,35	3,93	2,64
Antelope	6,10	1,61	5,28	2,36
StillLife	5,00	2,04	4,17	2,19
Woman_Three	6,38	1,61	4,97	2,43
Bride	6,52	1,70	4,83	2,35
Octopus	4,72	2,33	4,45	2,35
Parrots	6,79	1,86	5,41	2,40
Mother	8,24	1,18	6,62	2,96
House	8,00	1,16	6,14	2,77
Crying_Woman	2,45	1,62	3,45	2,59
Picnic	7,03	1,95	6,00	2,65
Mother_Two	7,41	1,55	5,52	2,82
Aimed_Gun_Four	2,21	1,72	4,07	3,25
Baby_Three	7,69	1,69	5,86	2,74
Pollution	1,59	0,82	4,31	2,97
Burn_Victim_Three	1,28	1,13	3,93	3,53
Angry_Face_Three	3,97	1,84	3,86	2,26

ToxicWaste	2,28	1,65	4,17	2,93
Cigarette	2,48	1,38	3,45	2,40
Jaguar	4,66	1,72	4,69	1,97
Attractive_Three	7,97	1,12	6,34	2,58
Store	6,10	1,47	5,45	2,25
Bomb_Two	3,55	2,15	4,00	2,33
Police_Two	1,69	1,14	3,86	3,40
Erotic_Female_Two	6,76	1,83	5,59	2,47
HomelessMan	2,59	1,32	3,72	2,02
Sunset_Two	6,59	2,10	4,72	2,79
Horses_Three	6,34	1,61	5,00	2,42
Boat_Two	6,66	1,97	6,07	2,56
Vomit_Three	2,03	1,30	3,31	2,98
Girl	2,03	0,98	3,41	2,06
Hangglider	5,90	2,45	5,07	2,33
Erotic_Female_Three	5,00	2,43	4,69	2,51
Attractive_Four	6,28	1,28	4,83	2,04
Snake_Four	2,48	1,99	3,55	2,59
Injured_Child	1,48	1,30	3,93	3,05
Skier_Two	6,55	1,92	5,21	2,58
Roaches	2,90	1,74	4,21	2,60
Boy_Four	5,86	2,20	5,07	2,53
LiftOff	7,21	2,04	6,17	2,42
KKK_Rally	1,52	1,12	3,86	3,37
Romance_Three	7,28	1,46	6,00	2,63
Sky_Surfer	7,14	1,92	5,83	2,55
Sky_Divers	6,03	1,97	5,79	2,16
Diver_Two	6,52	1,48	5,45	2,35
PitBull	2,07	1,39	4,17	3,12
Woman_Four	5,17	1,56	4,52	1,94
Baby_Four	8,03	1,80	6,21	3,32
Boy_Five	4,66	1,59	4,07	2,00
Women	5,34	1,70	4,90	2,06
Baby_Five	7,93	1,96	6,59	2,85
Train	6,38	1,84	4,90	2,38
Desserts	7,07	1,65	5,76	2,73
Puddle_Two	3,10	1,72	3,86	2,37
Attractive_Five	6,24	2,01	5,24	2,32
Baby_Six	8,24	1,38	6,66	2,92

Appendix Q

Table 5

Inferential Statistics for the SA-APS

Picture	*t*-test	*p*-value	Effect size
Mushroom_one	0,32	0,75	0,07
Hospital	-3,16	0,00	-0,64
Snake_one	2,00	0,05	0,43
Mutilation_one	-0,03	0,98	-0,01
SportsCar	-1,54	0,13	-0,26
Beach	1,41	0,17	0,28
Graffiti	0,21	0,84	0,04
WomanReadingone	-3,01	0,01	-0,62
EroticCoupleone	1,66	0,11	0,35
Bird	2,50	0,02	0,62
SmokePollution	-5,18	0,00*	-0,96
OilFires	-0,74	0,47	-0,15
ManFeedingGiraffe	1,36	0,18	0,27
DentalExam	-1,41	0,17	-0,27
PancakesScones	0,43	0,67	0,08
Twins	-1,94	0,06	-0,47
Lion_one	2,02	0,05	0,40
Flood	-0,55	0,59	-0,12
Injection_one	-0,38	0,71	-0,07
Shark	2,52	0,02	0,43
CoupleBikes	2,67	0,01	0,54
SadGirls	-0,73	0,47	-0,14
Gun_two	2,69	0,01	0,49
Snake_two	4,16	0,00	0,81
WomenDrinks	-1,92	0,06	-0,42
ManInPool	5,89	0,00*	0,89
BeachCouple	-0,97	0,34	-0,20
Fire_one	2,56	0,02	0,48
AbstractArt_one	2,46	0,02	0,52
EroticCoupleInBed	0,53	0,60	0,11
VideoTape	-0,50	0,62	-0,11
CoupleOld	-0,21	0,84	-0,04
Cow	2,98	0,01	0,64
Police_one	1,05	0,30	0,20
GrievingFemale	2,19	0,04	0,35
EroticNudeMale	6,82	0,00*	1,44
Shopping	-4,17	0,00	-0,95
FatherBaby	-1,18	0,25	-0,23

CandyBarOne	-0,09	0,93	-0,02
BikerOnFire	20,67	0,00*	1,88
WingWalkPlaneCarnival	-1,69	0,10	-0,35
Mushroom_two	3,55	0,00	0,64
Snakes_three	2,04	0,05	0,40
CarBootClampedWheel	-3,62	0,00	-0,73
Butterfly_one	3,96	0,00	0,82
Gang	3,58	0,00	0,58
Book	-5,11	0,00*	-1,05
ManOnFire	2,57	0,02	0,40
Mutilation_two	0,39	0,70	0,07
CarDamage_one	2,81	0,01	0,61
Sunset_one	6,59	0,00*	1,40
AimedGun_one	-0,01	0,99	0,00
Bucket	-1,71	0,10	-0,36
Chess_one	-3,12	0,00	-0,66
ManFisherman	-0,33	0,74	-0,07
TrashCan	-2,07	0,05	-0,44
Family	-1,29	0,21	-0,20
HospitalHallway	3,57	0,00	0,67
Kids	2,48	0,02	0,53
EroticCoupleFacing	0,88	0,39	0,19
SeaMuizenbergHomes	3,73	0,00	0,75
Attack_one	-1,04	0,31	-0,20
Shoes	2,51	0,02	0,50
Rower	0,10	0,92	0,02
Brownie	3,57	0,00	0,67
BatteredFemaleLyingDown_One	0,37	0,71	0,07
FamilyDinner	-5,39	0,00*	-0,81
ManComputer	-4,95	0,00*	-0,85
Lion_two	4,58	0,00*	1,00
BatteredFemaleLyingDown_Two	-1,18	0,25	-0,25
Mutilation_three	1,33	0,19	0,22
Chicken_two	-0,83	0,41	-0,14
Tornado_one	0,96	0,35	0,18
Injury	3,28	0,00	0,54
Gun_one	0,48	0,64	0,10
BabyIncubator	3,42	0,00	0,50
AssaultTorture	0,18	0,85	0,04
BurntBuilding	-1,97	0,06	-0,40
BloodyKiss	0,52	0,60	0,11
BurnVictim_one	3,00	0,01	0,46
Crochet	-3,54	0,00	-0,69
Children	-0,13	0,90	-0,03

NudeFemale	2,37	0,02	0,46
MutilationCadaver	-0,37	0,71	-0,08
MountainLake	3,23	0,00	0,51
Waterskiing	-0,08	0,94	-0,02
PoliceBaton	-2,07	0,05	-0,42
AccidentBodies	2,98	0,01	0,48
Money	-1,29	0,21	-0,21
KebabSkewer	-1,50	0,14	-0,30
Tornado_two	1,07	0,29	0,20
PoliceArrest	-0,54	0,59	-0,12
SurgeryOpenFinger	1,34	0,19	0,25
DirtyToilet	1,69	0,10	0,30
CakeBirthday	-1,80	0,08	-0,34
Rafters	4,37	0,00	0,91
DimlitRoomNeutralWoman	3,80	0,00	0,84
Father_one	1,16	0,25	0,24
Mud	0,03	0,97	0,01
Boat_one	3,28	0,00	0,79
ConcertFans	-4,76	0,00*	-0,87
BarbedWire	-1,45	0,16	-0,30
FruitPeaches	-4,39	0,00	-0,77
ManChilling	-3,54	0,00	-0,70
Ferry_two	1,86	0,07	0,31
Keyring	0,39	0,70	0,09
NeutralWoman	-3,59	0,00	-0,79
Surfers	4,12	0,00	0,82
Building	2,79	0,01	0,58
Chicken_one	-3,34	0,00	-0,53
Courtyard	0,84	0,41	0,17
Alcoholic	-0,80	0,43	-0,15
Spoon	-1,56	0,13	-0,42
PoleVaulter	0,46	0,65	0,09
Motorcycle	0,79	0,44	0,17
Shipwave	0,98	0,34	0,20
BurnVictim_two	0,98	0,34	0,16
DrugAddict_one	-2,24	0,03	-0,48
Coyote	5,87	0,00*	1,16
Attack_two	2,06	0,05	0,34
Elephants	1,62	0,12	0,38
AbstractArt_two	-2,05	0,05	-0,41
GirlCow	-0,68	0,50	-0,13
HIVtattoo_one	0,78	0,44	0,13
AimedGun_two	2,39	0,02	0,44
Spider	0,09	0,93	0,02

Mutilation_four	3,13	0,00	0,52
Sushi	-5,19	0,00*	-0,78
Runners	1,17	0,25	0,20
Seal_two	6,61	0,00*	1,43
Soldier_one	1,64	0,11	0,31
Flowers	3,76	0,00	0,67
Horses_one	4,10	0,00	0,66
Desert	4,43	0,00	0,86
Soldier_two	3,24	0,00	0,52
Mutilation_five	3,92	0,00	0,52
HarborSkyView	-0,62	0,54	-0,11
Boy_one	-3,71	0,00	-0,76
Bus	-2,06	0,05	-0,37
WomanGlasses	-2,41	0,02	-0,46
AngryFace_one	-5,65	0,00*	-0,77
AttractiveMan	-1,87	0,07	-0,35
Mutilation_six	5,10	0,00*	0,82
GrouperFish	2,74	0,01	0,50
MountainStorm	5,87	0,00*	1,01
VenusFlyTrapFern	-1,43	0,16	-0,32
Attractive_one	1,52	0,14	0,35
GirlReading	-1,92	0,07	-0,36
OilFire	4,26	0,00	0,75
Romance_one	2,77	0,01	0,60
GunsManBed	1,01	0,32	0,17
AirplaneTaxi	0,80	0,43	0,16
Bakers	-1,31	0,20	-0,29
Sailing	4,76	0,00*	1,10
EroticFemale_one	0,53	0,60	0,12
Father_two	-1,60	0,12	-0,35
CoupleKissCloseUp	0,42	0,68	0,07
Violin	0,77	0,45	0,16
Injection_two	-0,81	0,42	-0,15
Clothespins	-1,48	0,15	-0,29
Food	-1,95	0,06	-0,32
GasCan	0,35	0,73	0,08
Garbage_one	-2,06	0,05	-0,40
Ferry_one	3,16	0,00	0,58
Vomit_one	1,29	0,21	0,23
CarAccident_one	1,76	0,09	0,28
AttractiveRollerscate	1,40	0,17	0,25
FlowerProtea	2,78	0,01	0,54
KidsPlayingWater	1,55	0,13	0,34
RollerCoaster	2,77	0,01	0,56

IceCreamChoc	-0,41	0,69	-0,08
IceCream_two	-1,55	0,13	-0,27
NeutralBaby	5,08	0,00*	0,84
FliesOnPie	1,70	0,10	0,28
Mutilationseven	1,52	0,14	0,28
WomanLyingChair	-0,18	0,86	-0,04
Tornado_three	-4,37	0,00	-0,86
Diver_one	1,29	0,21	0,23
Scarves	-1,56	0,13	-0,31
Woman_one	-2,42	0,02	-0,51
CarDamage_two	-0,72	0,48	-0,14
Orangatun	4,15	0,00	0,71
Jet	3,95	0,00	0,64
Fire_two	1,08	0,29	0,21
Assault_one	3,86	0,00	0,67
Tornado_four	-0,79	0,43	-0,16
Dog	1,41	0,17	0,30
Cake	1,48	0,15	0,32
Couple_Open_Shirt	-2,02	0,05	-0,39
Mutilation_Eight	2,49	0,02	0,33
Smarties	-1,45	0,16	-0,26
Veiled_Woman	2,25	0,03	0,48
Tissue	-2,20	0,04	-0,43
CarAccident_Two	1,95	0,06	0,37
Infant	-0,63	0,54	-0,11
Buttons	-0,23	0,82	-0,05
Weightlift	-0,62	0,54	-0,10
Shadow	0,61	0,54	0,12
PaintBrush	0,56	0,58	0,12
PicnicTable	-2,03	0,05	-0,40
Garbage_Two	-0,79	0,44	-0,17
Erotic_couple_two	0,41	0,68	0,08
Soldier_Three	1,17	0,25	0,23
CarRacer	3,97	0,00	0,84
Ticket	-1,25	0,22	-0,27
Cemetery	0,20	0,84	0,03
BoysWGuns	3,84	0,00	0,65
CarAccident_Three	0,88	0,39	0,17
Accident	3,08	0,00	0,57
Toilet	17,27	0,00*	1,23
Baby_one	-3,76	0,00	-0,69
Hamburger	-0,97	0,34	-0,15
Couple_one	-1,50	0,15	-0,25
Garbage_three	0,28	0,78	0,06

Erotic_male	2,03	0,05	0,35
Terrorist	2,72	0,01	0,53
EroticCouple_Three	0,97	0,34	0,18
Cockpit	-0,01	0,99	0,00
Boy_Two	-0,57	0,57	-0,12
Erotic_Couple_Four	1,70	0,10	0,36
GirlandDog	-1,47	0,15	-0,30
Fruit	-0,32	0,75	-0,06
Couple_Two	-6,67	0,00*	-0,82
Assault_Two	0,72	0,48	0,14
Shipwreck	-0,41	0,69	-0,09
Attack_Three	2,03	0,05	0,39
CarAccident_Four	-0,01	1,00	0,00
Attack_Four	0,03	0,97	0,01
Woman_two	-6,94	0,00*	-1,23
Musician	-6,80	0,00*	-1,18
Watermelon	-0,95	0,35	-0,17
Boy_Three	6,48	0,00*	1,10
Mountain_One	3,05	0,00	0,57
Fire_Three	0,83	0,41	0,16
Attractive_Two	-1,40	0,17	-0,26
Clouds	4,74	0,00*	0,87
DrugAddict_Two	0,38	0,71	0,07
CryingBoy	-2,46	0,02	-0,49
Surfer	2,06	0,05	0,44
Butterfly_Two	0,84	0,41	0,15
ElderlyMan	-2,29	0,03	-0,41
Skier_One	4,22	0,00	0,89
Skulls	3,43	0,00	0,58
Ruins	-0,61	0,55	-0,14
Fire_Four	0,48	0,63	0,09
Nature	0,81	0,43	0,15
Erotic_Couple_Five	1,42	0,17	0,30
Romance_Two	-1,39	0,18	-0,25
Baby_Two	-1,19	0,24	-0,21
CarTheft	3,13	0,00	0,47
Neutral_Child	-2,01	0,05	-0,42
Woman_Reading_Two	-2,55	0,02	-0,54
Refugees	2,80	0,01	0,51
Bicyclist	0,30	0,77	0,06
CarWheelInMud	3,63	0,00	0,73
Boxer	2,30	0,03	0,40
NativeBoy	2,22	0,04	0,31
Chess_Two	-5,97	0,00*	-1,14

Seal_One	0,98	0,34	0,18
Cow	0,32	0,75	0,06
HIV_Tattoo_Two	-1,44	0,16	-0,28
Mountain_Two	-0,96	0,35	-0,18
IceCream_One	3,11	0,00	0,64
InjuredChildMan	0,99	0,33	0,17
Elderly_Woman	1,17	0,25	0,22
Gym	-2,74	0,01	-0,52
Tomatoes	-1,30	0,21	-0,25
Gun_Three	-0,24	0,81	-0,05
AttractiveFemale	-4,04	0,00	-0,63
Mug	-2,14	0,04	-0,47
Native_Female	1,54	0,13	0,32
Couple_Three	-3,63	0,00	-0,63
Traffic	-0,33	0,74	-0,05
Vomit_Two	-0,68	0,50	-0,14
Abstract_Art_Three	2,16	0,04	0,48
War	-4,43	0,00	-0,88
Nature_Two	5,06	0,00*	1,00
Cat	0,37	0,71	0,07
Roach	1,52	0,14	0,29
Mountain_Three	3,40	0,00	0,67
AngryFace_Two	-5,47	0,00*	-0,95
Male	1,40	0,17	0,23
DeadBody	2,96	0,01	0,45
Mutilation_Nine	1,37	0,18	0,24
Bomb	3,07	0,00	0,52
Antelope	4,23	0,00	0,80
StillLife	-0,50	0,62	-0,11
Woman_Three	-2,00	0,06	-0,42
Bride	3,55	0,00	0,71
Octopus	2,60	0,01	0,55
Parrots	-1,98	0,06	-0,41
Mother	-3,19	0,00	-0,55
House	-5,96	0,00*	-1,02
Crying_Woman	-0,66	0,51	-0,13
Picnic	-1,91	0,07	-0,40
Mother_Two	-1,68	0,10	-0,33
Aimed_Gun_Four	2,77	0,01	0,50
Baby_Three	1,53	0,14	0,30
Pollution	8,25	0,00*	1,13
Burn_Victim_Three	1,54	0,13	0,29
Angry_Face_Three	-1,83	0,08	-0,33
ToxicWaste	4,73	0,00*	0,92

Cigarette	1,82	0,08	0,30
Jaguar	6,26	0,00*	1,01
Attractive_Three	-7,54	0,00*	-1,08
Store	-0,74	0,46	-0,13
Bomb_Two	-1,48	0,15	-0,31
Police_Two	3,60	0,00	0,59
Erotic_Female_Two	-0,47	0,64	-0,09
HomelessMan	1,15	0,26	0,22
Sunset_Two	2,73	0,01	0,61
Horses_Three	2,79	0,01	0,51
Boat_Two	2,26	0,03	0,50
Vomit_Three	-0,60	0,55	-0,11
Girl	3,49	0,00	0,48
Hangglider	1,78	0,09	0,40
Erotic_Female_Three	2,23	0,03	0,44
Attractive_Four	-0,24	0,82	-0,03
Snake_Four	3,75	0,00	0,71
Injured_Child	1,32	0,20	0,25
Skier_Two	0,67	0,51	0,14
Roaches	0,85	0,40	0,17
Boy_Four	-3,04	0,01	-0,63
LiftOff	-0,52	0,61	-0,11
KKK_Rally	2,75	0,01	0,39
Romance_Three	-3,01	0,01	-0,53
Sky_Surfer	-0,36	0,72	-0,07
Sky_Divers	4,19	0,00	0,88
Diver_Two	-0,50	0,62	-0,09
PitBull	5,75	0,00*	0,94
Woman_Four	2,17	0,04	0,44
Baby_Four	-0,37	0,71	-0,08
Boy_Five	1,20	0,24	0,20
Women	-4,08	0,00	-0,71
Baby_Five	-0,19	0,85	-0,04
Train	-1,31	0,20	-0,26
Desserts	-1,73	0,09	-0,32
Puddle_Two	2,06	0,05	0,42
Attractive_Five	0,72	0,48	0,14
Baby_Six	-1,45	0,16	-0,29

Note. * $p < .00012$

Appendix R

Table 6

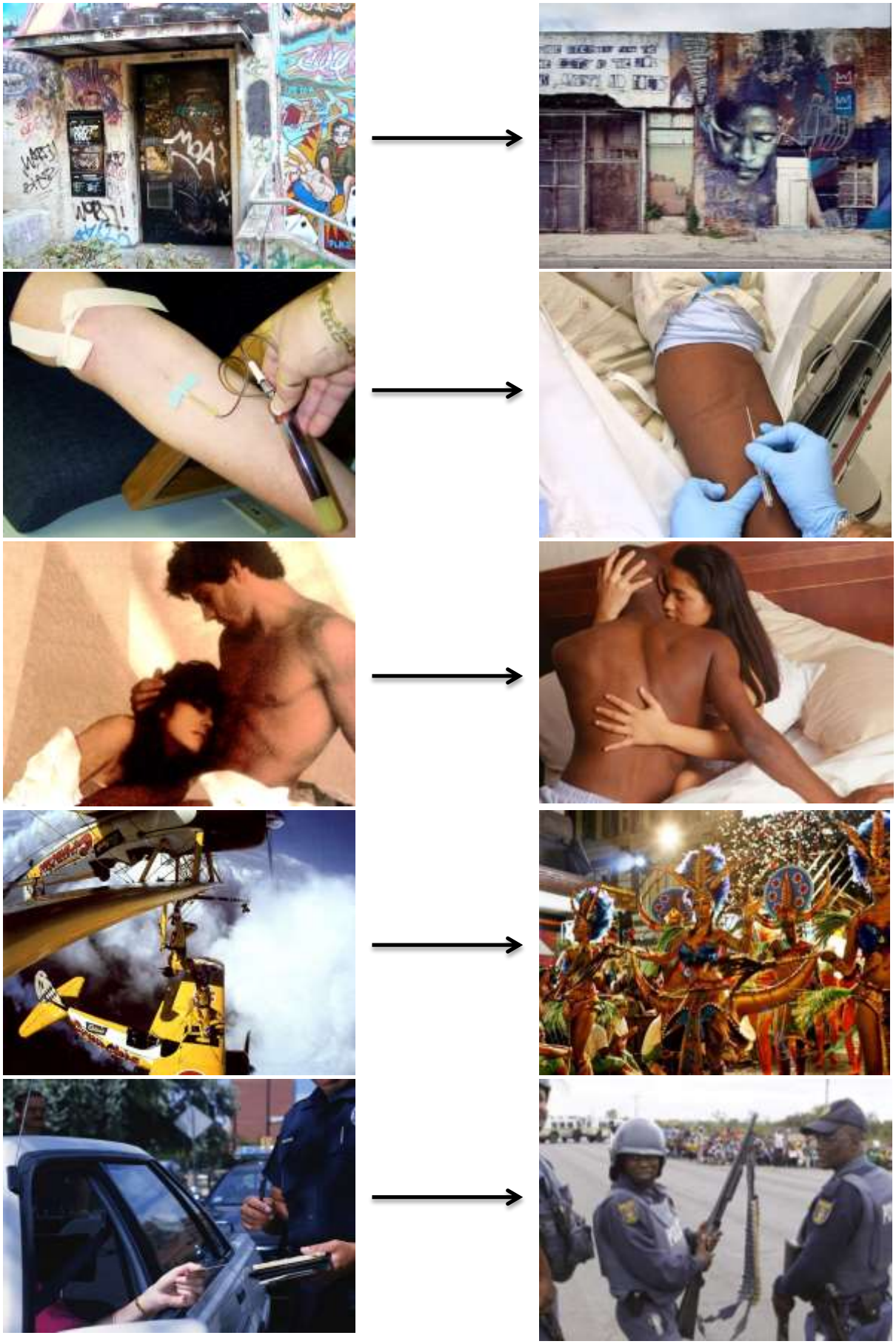
Inspection of Valence Discrepancies

Name	Norm	Valence Norm	SA on IAPS	Valence IAPS	Image Number	SA on SA-APS	Valence SA-APS
Smoke Polllution	negative	2,8	negative	2,72	9280	neutral	4,28
Sunset one	positive	8,0	positive	6,72	5830	neutral	5,59
Man on computer	neutral	5,3	neutral	5,28	7550	positive	6,38
Crochet	neutral	5,5	neutral	5,86	7513	positive	6,48
Dim Lit Room	neutral	5,1	neutral	5,59	2038	negative	3,69
Barbed wire	negative	3,9	negative	3,66	9010	neutral	4,52
Flowers	positive	7,1	positive	6,14	5000	neutral	5,93
Bus	neutral	5,5	neutral	5,86	7140	positive	6
Angry Face	negative	3,9	negative	3,72	2100	neutral	5,07
Attractive one	positive	6,3	positive	6,45	4007	neutral	5,45
Romance one	positive	6,4	positive	6,41	4600	neutral	5,17
Bakers	neutral	5,5	neutral	5,83	2579	positive	6
Ferry one	positive	6,5	positive	6,24	7489	neutral	5,62
Rollercoaster	positive	7,2	positive	6,41	8492	neutral	5,79
Neutral baby	positive	6,6	positive	6,21	2250	neutral	4,93
Paintbrush	positive	6,0	positive	6,72	7509	neutral	5,83
Crying boy	negative	3,2	negative	3,31	2457	neutral	4
Erotic couple 5	positive	6,5	positive	6,41	4698	neutral	5,93
Chess two	neutral	4,9	neutral	5,41	2840	positive	6,69
Attractive female	neutral	5,4	neutral	5,59	4274	positive	6,41
Couple 3	neutral	5,6	neutral	5,34	4605	positive	6,48
War	negative	2,6	negative	1,76	2683	neutral	4,31
Angry Face Two	negative	3,7	negative	3,79	2110	neutral	5,34
Store	neutral	5,9	neutral	5,69	7495	positive	6,1

Appendix S

Illustrations of Images that Worked

IAPS Images **SA-APS Images**



Appendix T

Political, Value-Laden Images

IAPS Images **SA-APS Images**